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THE TECHNICAL MAGAZINE FOR MANUFACTURERS OF PAINT, VARNISH, LACQUER AND OTHER SYNTHETIC FINISHES

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SEPTEMBER 1955

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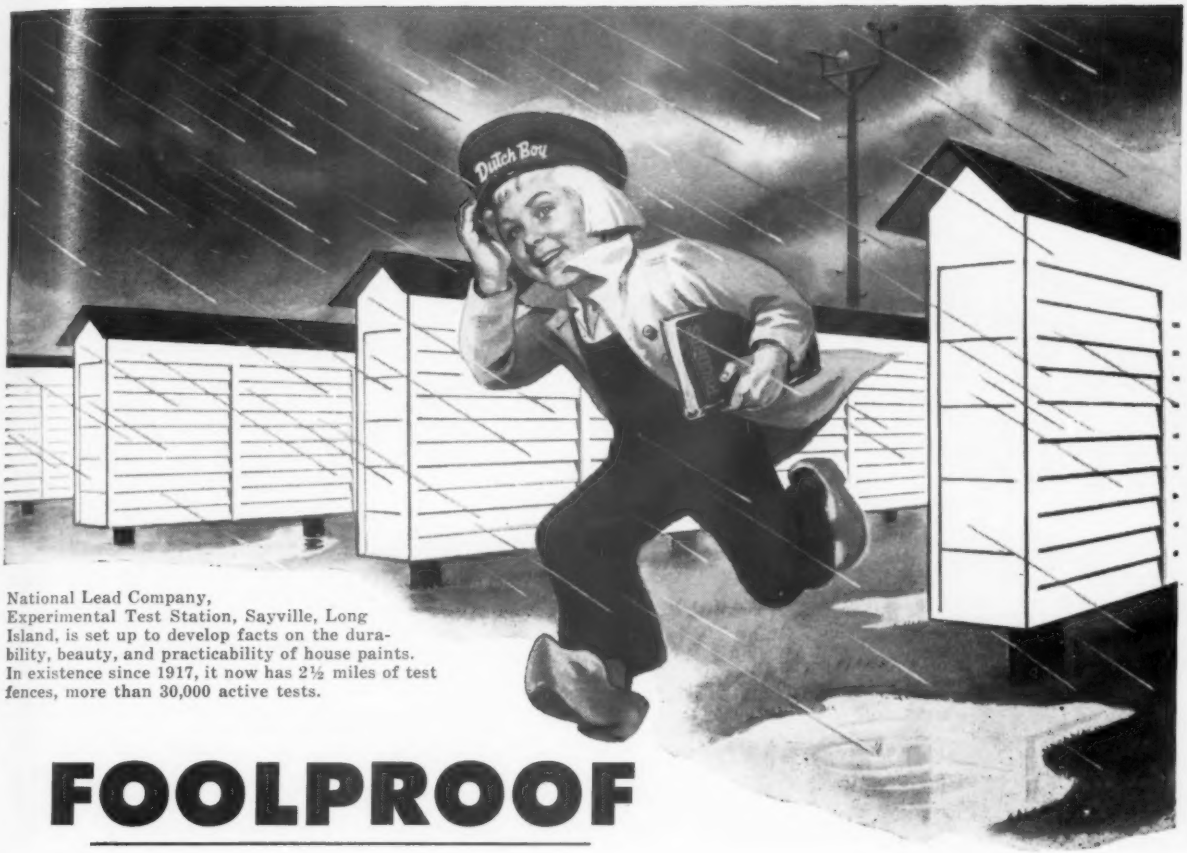

National Lead Company, Experimental Test Station, Sayville, Long Island, is set up to develop facts on the durability, beauty, and practicability of house paints. In existence since 1917, it now has 2½ miles of test fences, more than 30,000 active tests.

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Note the absence of staining on this STYRENE-BUTADIENE exterior latex paint job. Surface stays clean and fresh and will not water spot.

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PAINT and VARNISH Production

(REG. U.S. PATENT OFFICE)

Formerly PAINT and VARNISH PRODUCTION MANAGER
(Established in 1910 as The Paint and Varnish Record)

VOL. 45 SEPTEMBER, 1955 NO. 10

NEXT ISSUE

In conjunction with the annual paint conventions scheduled next month in New York and Washington, we are pleased to announce that our October issue will be an all convention number.

Included in this convention issue will be programs of both the Federation and National Association together with a complete listing of all exhibitors at the Paint Industries' Show.

A special feature of this issue will be a series of exclusive articles on "How Radioisotopes and Nuclear Energy Can Further Paint Progress." The purpose of this article is to arouse your interest in the utilization of nuclear energy to further paint progress; to acquaint you with the potentialities of isotopes; to indicate some of the factors to be considered in planning an atoms-for-paint program; and to give you a conception of the probable costs of such a program.

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MEMBER BUSINESS BPA PUBLICATIONS AUDIT, INC.

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Editorial Comment

September, 1955

Plan Now For This Meeting

NEXT MONTH the Federation of Paint and Varnish Production Clubs and the National Paint, Varnish and Lacquer Association will hold their annual conventions in New York and Washington respectively.

The Federation will meet Oct. 3-5th at the Hotel Statler and the National Association will hold their convention Oct. 31-Nov. 2nd at the Shoreham and Sheraton-Park Hotels.

This is the first year that both organizations will hold separate meetings—a decision deemed necessary due to the growth of these important paint groups.

This year's meeting marks the first time that the Federation has visited New York City and in view of this occasion will provide a most interesting program which must be designated as a banner attraction.

The Annual Joseph J. Mattiello Memorial Lecture will be delivered by Dr. H. F. Mark, Director of the Polymer Research Institute at the Polytechnic Institute of Brooklyn. Dr. Mark, one of the most eminent polymer scientists of our time, will speak on "New Types of High Polymers and Their Application in Paint and Varnishes."

In selecting Dr. C. F. Kettering, one of the world's most outstanding spokesmen for industrial research, to keynote this meeting, the Federation could not have made a better choice. His accomplishments in industrial research are too numerous to list here but they range from the automotive self-starter to information on photosynthesis and cancer.

As in the past, several constituent club papers dealing with various technical problems will be presented. In addition, a nine-man panel will present a lively discussion on the most timely topic of the paint industry today, "An Evaluation of PVA, Acrylic and Styrene Butadiene Emulsion Paints."

Eighty-two exhibitors will participate in the Paint Industries' Show of 1955, which is a sellout.

P. J. Whiteway, Jr., chairman of the Federation's Show Committee, stated that the sellout assures those attending this year's Federation meeting an excellent presentation of technical advances in those industries supplying the paint, varnish, printing ink, and allied industries. The technical advances may relate to new products, new knowledge relating to existing products, and their uses or existing knowledge which is not generally available to consuming industries.

With a record-breaking attendance expected at this meeting, the Show Committee has scheduled the Paint Show to open two evenings. This wise decision will also allow a maximum number of visitors to see the Show without missing any of the technical sessions.

In view of the well planned program for this particular meeting, we urge your attendance at this important function of the coatings industry in New York early next month.

We Thank You

TO those good friends who were kind enough to spend their valuable time to answer our recent readership survey, we should like to take this means of thanking each and every one most sincerely.

We particularly appreciate the many suggestions given on editorial matter that you would like to see appear in PAINT AND VARNISH PRODUCTION and your very close attention to the details of the survey in checking the departments of the publication which you find most interesting.

To those of you who made special comments we want to assure you that they will be given careful attention by our editorial staff, because it is guidance of this kind that enables us to provide you with the latest pertinent information, so essential to the technological progress of the coatings industry.

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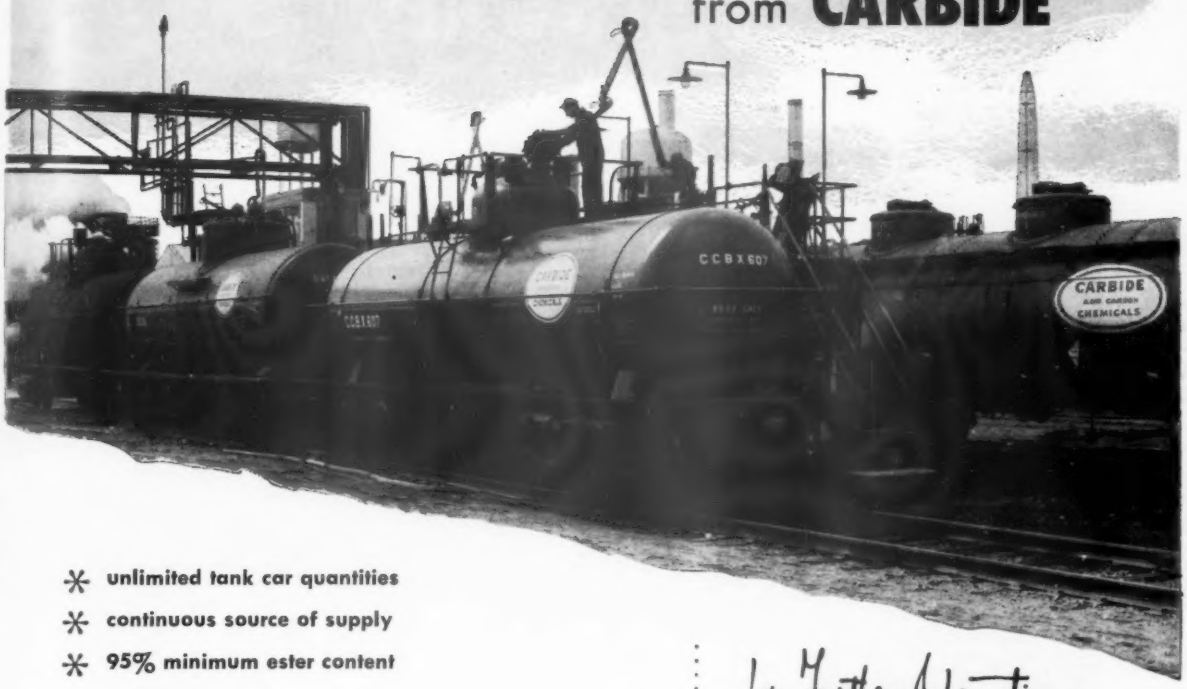

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Relative Evaporation Rate (n-butyl acetate = 100)....42
Toluene Dilution Ratio.....2.3
Naphtha Dilution Ratio.....1.3
Blush Resistance, % R.H. at 80° F.....91

Tentative Specifications		Typical Analysis
0.873—0.879	Specific Gravity at 20/20°C.	0.8761
135—150°C.	Boiling Range at 760 mm.	140.3—148.3°C.
95% min.	Purity (ester content)	96.5%

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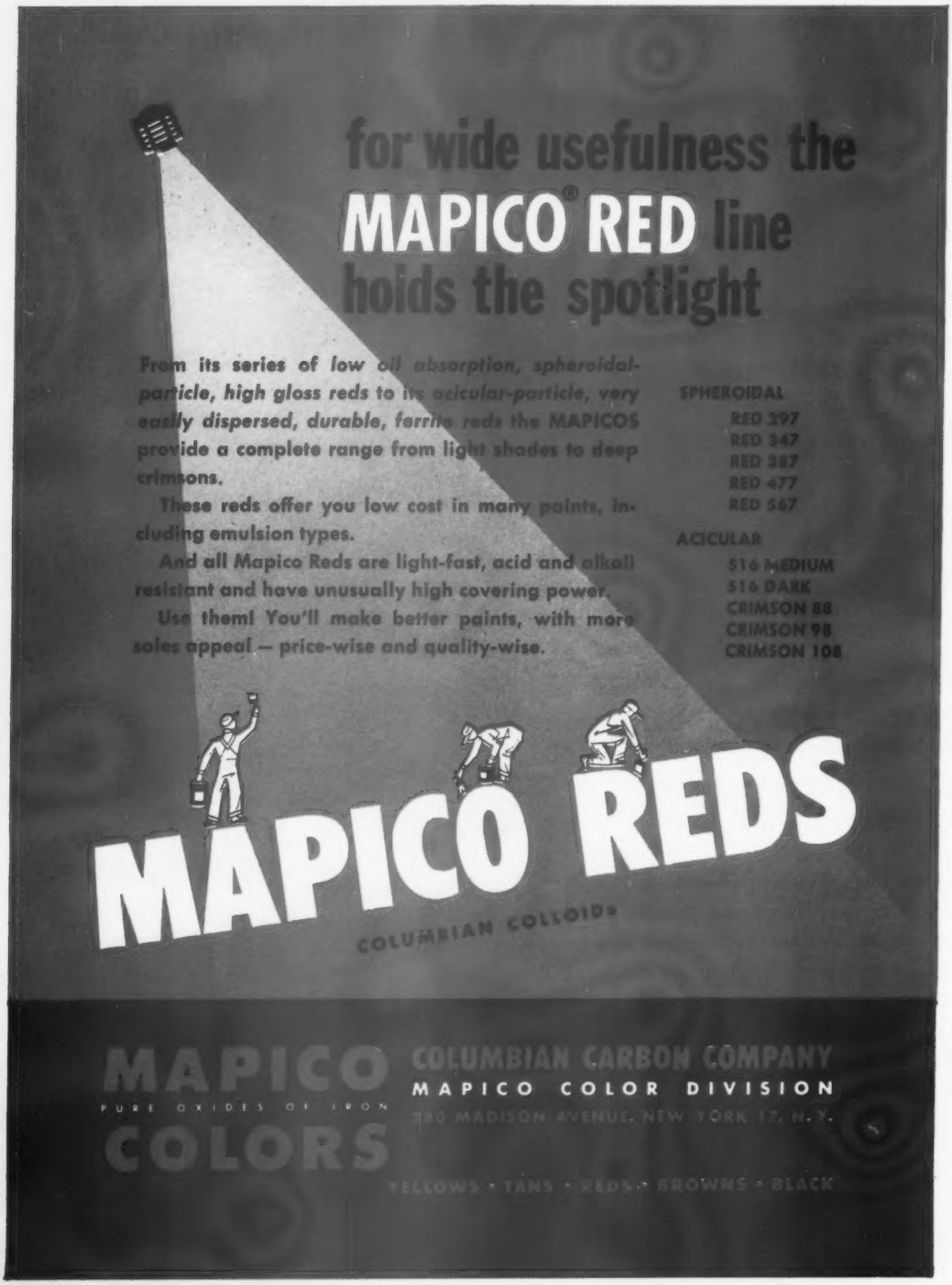
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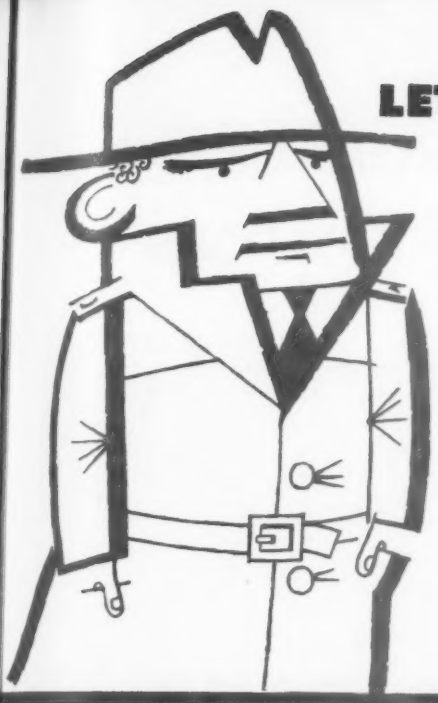
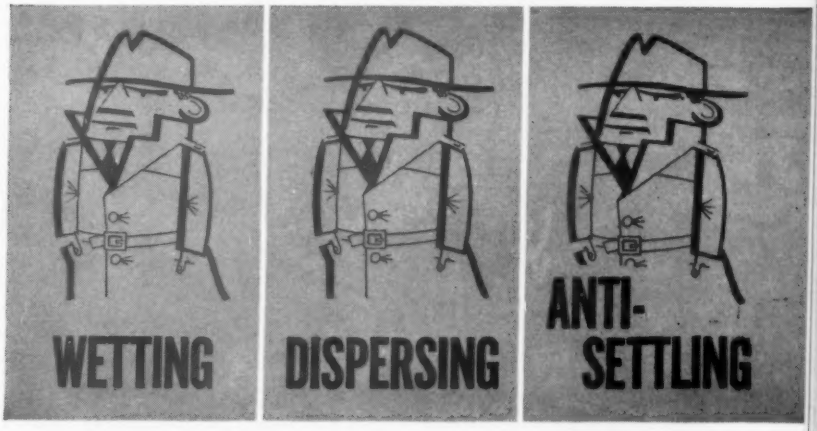


LET ONE AGENT DO THE WORK OF THREE



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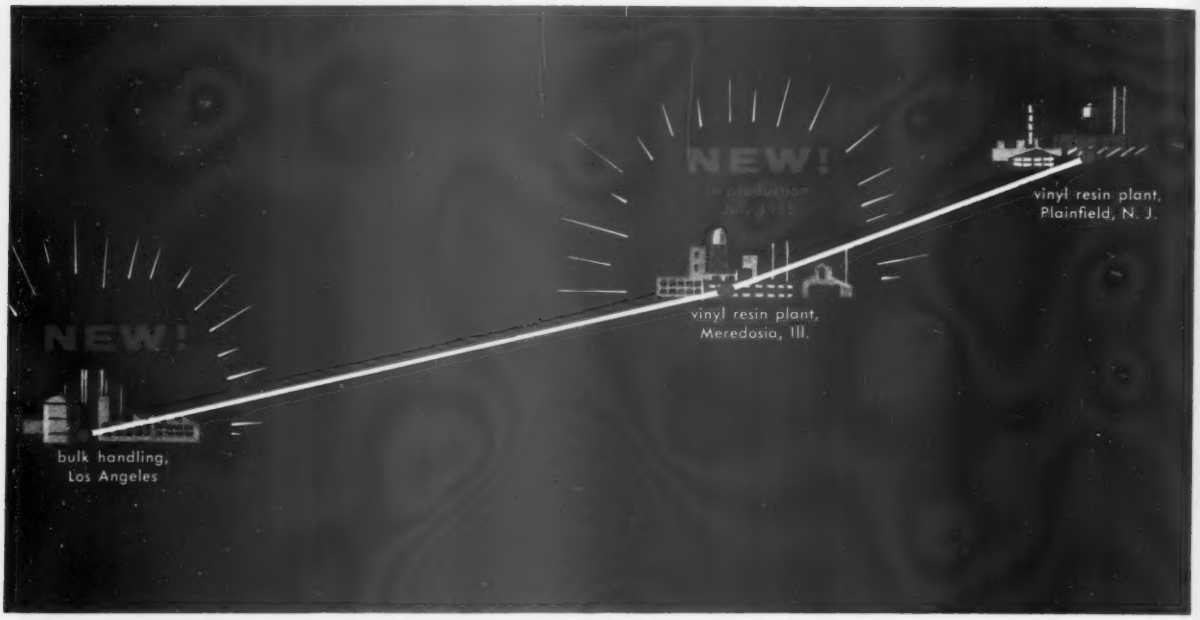
News about National's Resyn 12K-51 for paints



STILL MORE!...FASTER!

—for the third time in three years.

National again expands facilities for Resyn 12K-51, its inherently flexible PVAc copolymer emulsion.

This time it's two new installations:

1—*a second vinyls plant at Meredosia, Illinois.*

2—*bulk handling at Los Angeles.*

—in addition to our increased capacity at Plainfield, N. J.

This means still more Resyn 12K-51. And it reflects our growth in a fast expanding vinyl paint market that has a potential volume of 30,000,000 gallons.

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If you haven't evaluated the pigment binding power, film toughness and other unusual advantages of Resyn 12K-51, get in touch with your nearest National office.

Our vinyl paint chemists will be happy to supply the details.

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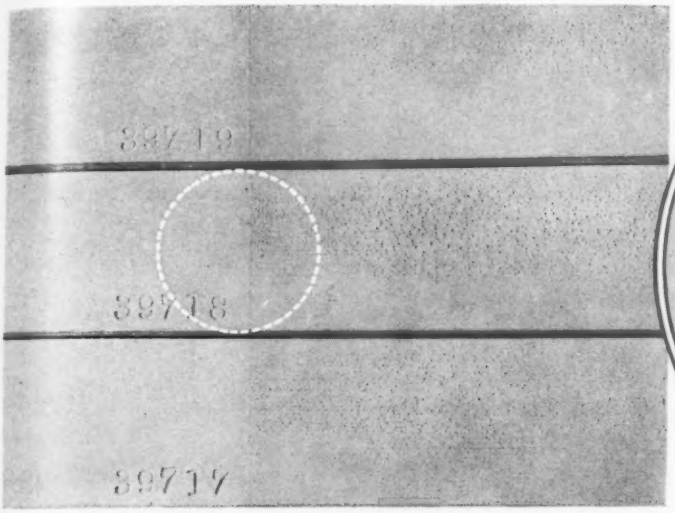
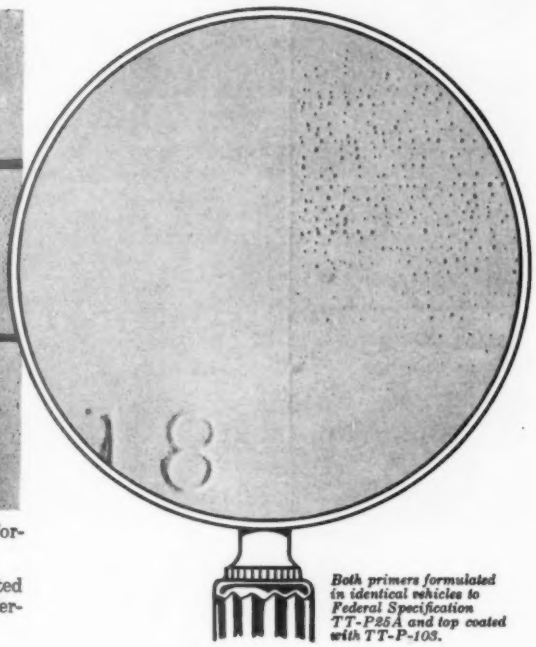
Compare the difference in these two paint primers!



Test panels on left show that *no blistering* occurred in the paint primer formulated with Eagle-Picher Super Sublimed White Lead.

Test panels on right show definite *blistering* in the paint primer formulated with an equal volume of a highly reactive lead pigment. Compare the difference in the magnified area on extreme right.



Both primers formulated in identical vehicles to Federal Specification TT-P25A and top coated with TT-P-103.

EAGLE-PICHER
SUPER SUBLIMED WHITE LEAD
provides greater blister resistance!

Accelerated tests prove that blistering—caused by loss of adhesion when moisture content is high—*does not occur* when quality house paint primers are formulated with Eagle-Picher Super Sublimed White Lead. Even under extremely adverse moisture conditions, these primers show very little water absorption, low volumetric swelling and superior adhesive characteristics.

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Titanium Dioxide—Rutile	1.13
Magnesium Silicate	3.41
Raw Linseed Oil	1.32
Z Linseed Oil	2.47
Mineral Spirits	1.62
24% Pb	.06
6% Mn	.03
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PVC—35.5%

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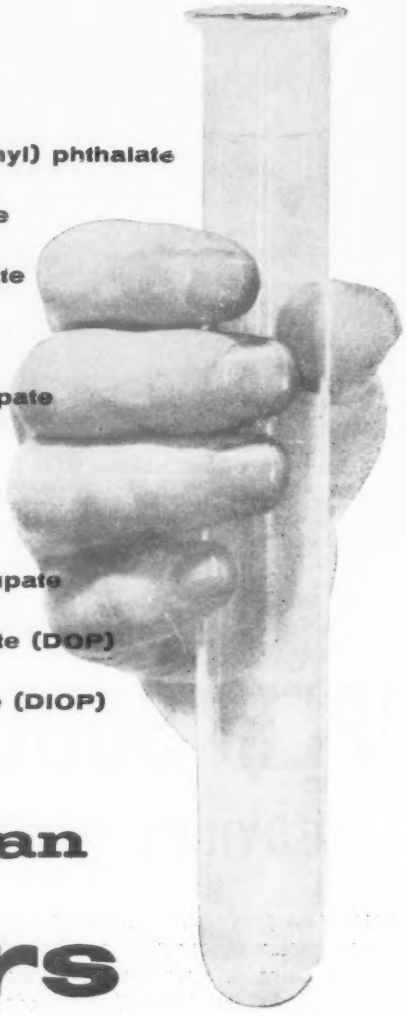

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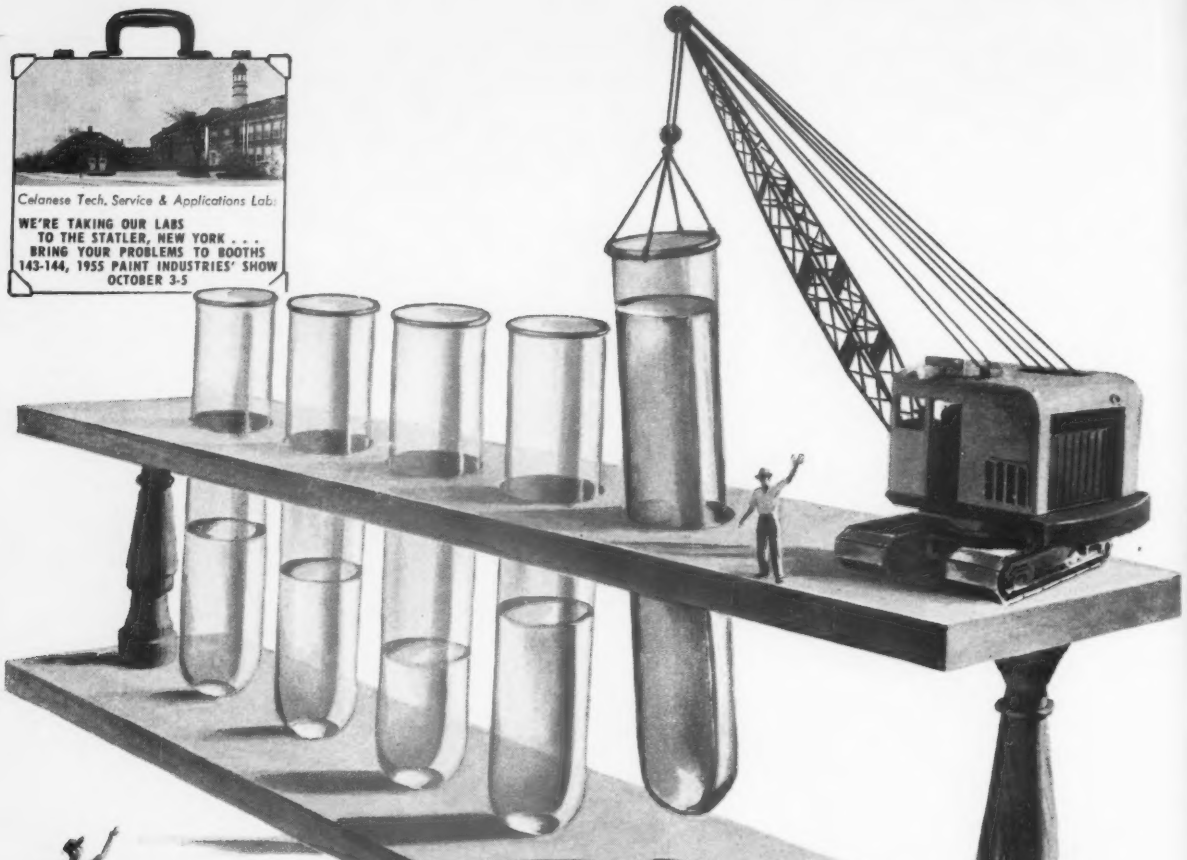
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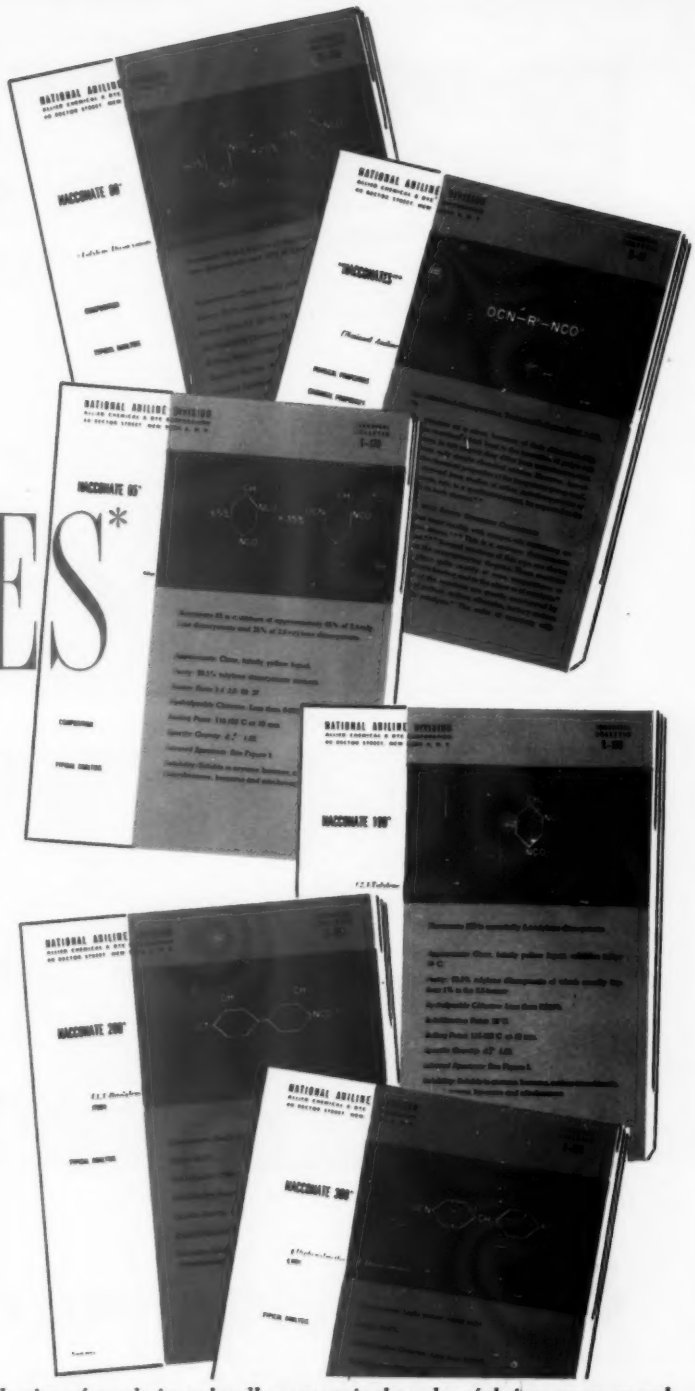

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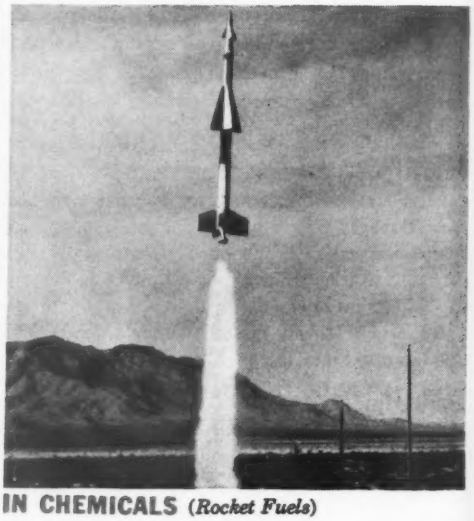

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PARATAC	Secondary Butyl Acetate	Decyl Alcohol
PETROHOL	Isopropyl Acetate	Denatured Ethyl Alcohol
Methyl Ethyl Ketone	Acetone	Tridecyl Alcohol
Dewaxing Aid	Methyl Ethyl Ketone	Dicyclopentadiene
Ethyl Ether	Dicyclopentadiene	Isoprene
Isopropyl Ether	Ethyl Ether	Butadiene
Reference Fuels	Isopropyl Ether	Ethyl Ether
RUBBER	Naphthenic Acids	Isopropyl Ether
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FACTORS INFLUENCING THE UNRUBBED GLOSSINESS OF METAL LACQUERS

By
G. N. Bruxelles
B. H. Mahlman

PREVIOUS work has shown that the major physical factor which influences glossiness of organic coatings is the degree of departure of the film surface from optical planeness (1). In the case of lacquer-type finishes which dry primarily by evaporation of solvent, surface roughness may be affected by several variables which include:

(1) Pigmentation of lacquer (pigment volume concentration, particle size, and degree of dispersion).
(2) Evaporation rate and composition of solvent blend.
(3) Lacquer solids at application viscosity.
(4) Application technique.
(5) Lacquer film thickness.
(6) Application temperature of substrate.
(7) Roughness of substrate material.
(8) Roughness of primer film surface.
(9) Swelling action of lacquer solvent on primer.

The objective of the work reported herein was to demonstrate and record the relative effects of variables (2, 4, 7, 8, 9) on the glossiness of a single nitrocellulose lacquer solids composition applied under the carefully controlled conditions permitted with automatic spray equipment.

Procedure

A total of 324 6- by 12-inch panels of glass, "Bonderized" steel, cold-rolled steel, and rough sand-blasted steel were prepared. These represented triplicate panels of 108 systems. The lacquer topcoat solids consisted of a 10 : 20 : 3 weight ratio of RS Nitrocellulose (½-sec.), coconut oil-modified alkyd, and dioctyl phthalate pigmented with 5% by weight of carbon black. It was applied from: (1) a conventional cold-spray solvent, (2) a conventional hot-spray solvent, (3) a hot-spray solvent modified with 12% butyl Cellosolve, and (4) a "high-low" solvent. The lacquers formulated with the conventional and the modified hot-spray solvents were applied at 160°F; the lacquer containing the "high-low" solvent system was applied at room temperature and at 130°F.

These lacquer topcoats were applied to the unprimed substrates and to the substrates primed with: (1) a commercial nitrocellulose lacquer primer conforming to Specification MIL-P-11414A, (2) an experimental nitrocellulose lacquer primer containing conventional pigments, (3) an experimental nitrocellulose lacquer primer formulated with fine-particle pigments only, (4) a commercial baking primer, and (5) an experimental baking primer formulated with fine-particle pigments only. None of the primers was sanded before application of the topcoat.

Identification of the 108 substrate—primer—topcoat systems prepared is shown in Table I; formulation of the lacquer topcoats and primers is shown in Table II.

The dry film thicknesses of the primers were controlled within the limits of 1.0 to 1.3 mils, and the dry film thicknesses of the lacquer topcoat were controlled within 1.5 to 2.0 mils. The spraying conditions and coating schedule used are summarized in

This paper was presented at the Meeting of the Technical Committee of the National Paint, Varnish and Lacquer Association, February 24, 1955, in Boca Raton, Fla.
G. N. Bruxelles and B. H. Mahlman are connected with the Hercules Experiment Station, Hercules Powder Co., Wilmington, Del.

Table I

PANEL DESIGNATIONS
LACQUER SOLVENT SYSTEM AND METHOD OF APPLICATION OF TOPCOAT

Topcoat	1				2				3				4				5			
	Cold Spray				Hot-Spray(2)				Hot-Spray with 12% Butyl Cellosolve(2)				High-Low Thinner Cold-Spray				High-Low Thinner Hot-Spray(3)			
Panel(1)	G	B	CR	SB	G	B	CR	SB	G	B	CR	SB	G	B	CR	SB	G	B	CR	SB
Primer																				
A. Lacquer Type—Conventional Pigments	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
B. Baking Type(4)—Fine Particle Pigments	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
C. Baking Type(4)—Commercial	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
D. Lacquer Type—Fine Particle Pigments	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
E. Unprimed	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
F. MIL-P-11414A Lacquer—Commercial	109	110	111	112	113	114	115	116	—	—	—	—	—	—	—	—	—	—	—	—

(1) G = Glass
B = Bonderized
CR = Cold-Rolled
SB = Sandblasted
(2) 160° F.
(3) 130° F.
(4) 45 minutes at 270° F.

Table III. Figures 1 and 2 illustrate the automatic spray equipment which was used for finishing all panels. It is based on ASTM Standard D823-51T, but the components were modified to provide automatic horizontal movement of the surface being sprayed and manual vertical movement of the spray gun. This modification permitted the spray pattern to be "lapped" and resulted in a uniform film thickness of applied coating.

Gloss readings were obtained for each of the triplicate panels with the Gardner 60° glossmeter. The three readings were averaged, and these results which are shown in Table IV are included to indicate the general level of values obtained.

Of the several appearance criteria which are used for the estimation of glossiness, perhaps the most common is the "distinctness of reflected image." Although 60° glossmeters are in extensive use, the values obtained often correlate poorly with visual evaluation, especially in the high-gloss range. (Recent work by other investigators on ASTM Committee D-1 has indicated that reflectance values obtained at 20° incidence may be more suitable for the high-gloss range.) It was desired, therefore, to supplement the glossmeter readings with a more definitive method of recording visual impressions.

Photographic methods for recording glossiness have been used successfully by other investigators, and it was felt that such a method could be adapted for the purposes of this report. Photographs of all panels were taken in groups of four panels each, and the same panel (No. 10, Table I) was included in each photograph as the control. Several of these groupings are shown in Figures 3 through 7. (The number shown on the upper right-hand corner of each panel represents the 60° glossmeter reading.) Differences in visual gloss are very evident and are shown as variations in clarity of a grid image reflected in the lacquer topcoat surface.

Results

The major differences, which were based on observation of the actual panels and the photographs, were as follows:

A. *Comparison of Unprimed Substrates*

Of the four panel substrates used, glass provided the best lacquer topcoat glossiness, followed by "Bonderized" steel, cold-rolled steel, and rough

Table II

LACQUER TOPCOAT AND PRIMER FORMULATIONS

	Topcoats				Primers				
	1	2	3	4	A	B	C	D	F
	Cold-Spray	Hot-Spray	Ho.-Spray with 12% Butyl Cellosolve	High-Low Thinner	Lacquer Type Conventional Pigments	Baking Type Fine-Particle Pigments	Baking Type Commercial	Lacquer Type Fine-Particle Pigments	Lacquer Type MIL-P-11414A
Vehicle Solids									
RS Nitrocellulose, ½-sec.	10	10	10	10	10	—	—	10	10
Non-oxidizing Alkyd (Solids)	20	20	20	20	20	—	—	20	20
Dioctyl Phthalate	3	3	3	3	3	—	—	3	—
Tricresyl Phosphate	—	—	—	—	—	—	—	—	3
Medium Oil Length Linseed Alkyd	—	—	—	—	—	10	—	—	—
Pigment, % of Solids by Weight	(1)	(1)	(1)	(1)	56%	60%	—	56%	52%
Pigment									
Aluminum Stearate	—	—	—	—	0.4	—	—	0.4	0.4
Red Oxide N3185	—	—	—	—	50.7	—	—	—	50.7
Red Oxide R08097	—	—	—	—	—	—	—	50.7	—
$ZnCr0_4$ Y539D	—	—	—	—	10.0	—	—	10.0	10.0
Asbestine 3X	—	—	—	—	38.9	—	—	—	12.0
ASP 100	—	—	—	—	—	50.0	—	38.9	—
Red Oxide 4097	—	—	—	—	—	50.0	—	—	—
Fibrous Acicular Talc	—	—	—	—	—	—	—	—	26.9
					100.0	100.0		100.0	100.0
Solvent									
Ethyl Acetate	10.0	4.3	4.3	3.1	10.0	—	—	10.0	10.0
Methyl Ethyl Ketone	—	—	—	13.0	—	—	—	—	—
Isopropyl Acetate	—	—	—	10.8	—	—	—	—	—
Butyl Acetate	15.0	33.7	21.7	—	15.0	—	—	15.0	15.0
Butyl Cellosolve	—	—	12.0	10.0	—	—	—	—	—
Methyl Amyl Acetate	—	—	—	10.0	—	—	—	—	—
Ethanol	10.0	10.0	10.0	8.0	10.0	—	—	10.0	10.0
Butanol	5.0	12.0	12.0	—	5.0	—	—	5.0	5.0
Toluene	60.0	7.0	7.0	5.1	60.0	—	—	60.0	60.0
Xylene	—	33.0	33.0	15.0	—	—	—	—	—
Hexane	—	—	—	25.0	—	—	—	—	—
Mineral Spirits	—	—	—	—	—	100.0	100.0	—	—
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(1) Carbon black at 5% of solids

Figure 1. Close-up of automatic spray equipment.

Figure 2. Automatic spray equipment in operation.

Table III

SPRAYING CONDITIONS(1) TO GIVE 1-1.3 MIL PRIMER AND 1.5-20 MIL TOPCOAT

Coating	Fluid Needle Turns Open	Number of Passes(2)
Lacquer Primer A	7	6
Lacquer Primer D	7	6
Baking Primer B	4	3
Commercial Baking Primer C	2½	6
Lacquer Primer F	7	6
Cold-Spray Topcoat 1	4	9
Hot-Spray Topcoat 2	6	6
Hot-Spray Topcoat 3	6	6
Cold-Spray, High-Low 4	4	9
Hot-Spray, High-Low 5	2	6

(1) MBC Gun

For Cold-Spray	For Hot-Spray
30 Cap E Tip 40 p.s.i. Air Viscosity 20 sec. at 25°C. No. 4 Ford Cup	765 Cap FX Tip 15-20 p.s.i. Fluid 60 p.s.i. Air Viscosity No. 4 Ford Cup— Standard—60 sec. at 25° C. High-Low Thinner—40 sec. at 25° C.

(2) Spray machine panel travel ¾ ft./sec.
One coat = 3 passes along length of 6- by 12-inch panel
1 pass along center
1 along each long edge.
Air-dried 30 minutes between coats

sandblasted steel, in that order (Figures 3 and 4).

B. *Comparison of Primers*

Of the five primers tested, best lacquer topcoat glossiness was obtained on all substrates with experimental Baking Primer B (Panel Nos. 21 through 40, Table I). Primer B was based on a linseed oil (medium oil length) modified-alkyd resin pigmented with a fine-particle red iron oxide and a fine-particle extender pigment. Lacquer topcoats applied over Lacquer Primer D which contained fine-particle pigments only showed slightly improved glossiness compared to the same topcoats applied over the other lacquer primers tested (A and F).

C. *Comparison of Lacquer Topcoat Solvent Systems*

The conventional hot-spray solvent system, the hot-spray solvent modified with 12% butyl Cellosolve, and the "high-low" solvent blend in the lacquer topcoat applied hot or cold, all gave glossiness superior to that of the cold-spray lacquer formulation, regardless of primer type or substrate material used. It appeared possible to obtain the highest film thickness per pass of the spray gun with the lacquer topcoat formulated with the "high-low" solvent blend, applied at 130°F.

Discussion of Results

The lacquer topcoats which contained slow evaporating solvents and which were applied either by hot-spray or cold-spray to the smoothest surface baking primer over the smoothest substrates possessed the best visual gloss of the systems tested. These systems are represented by Panel Nos. 26, 30, 34, and 38, Table I. There appeared to be little choice among Lacquer Topcoats 2, 3, and 4, Table II; all contained relatively slow evaporating solvents and provided excellent flow and freedom from "orange peel." The use of only fine-particle pigments, especially in the experimental baking primer (Primer B, Table II)

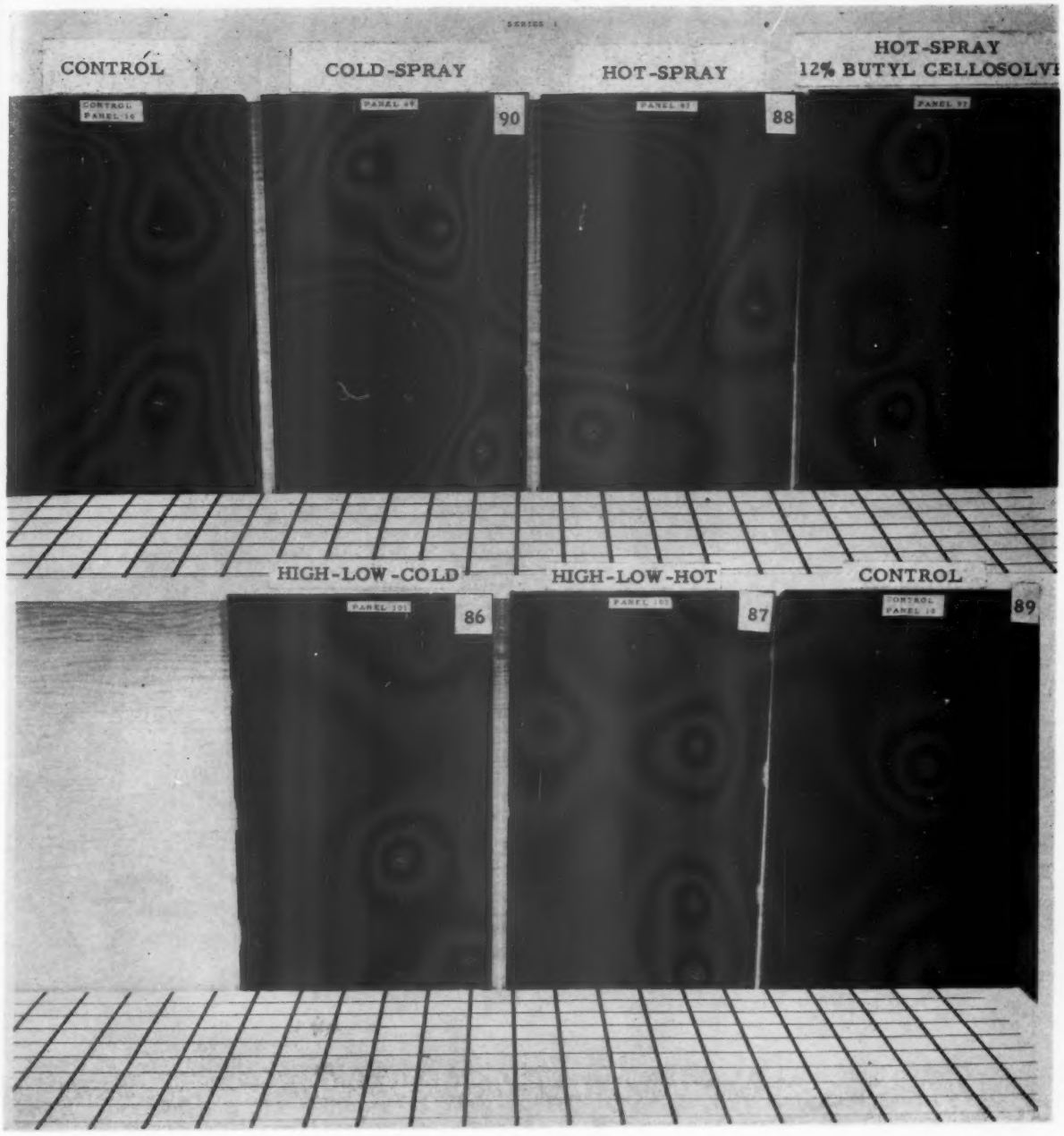

Figure 3. Lacquer topcoats of different solvent systems applied to unprimed glass.

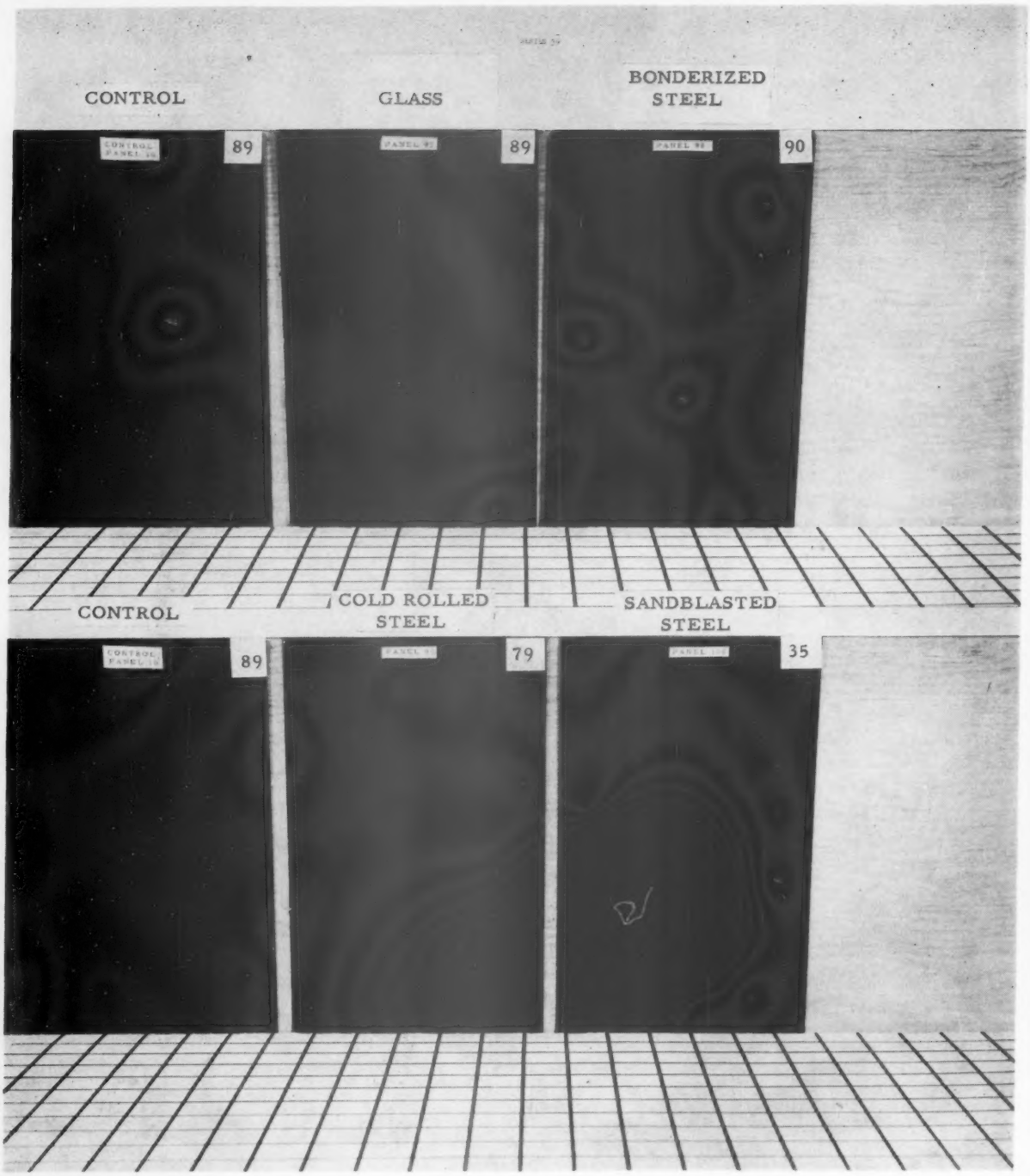

Figure 4. Hot-spray lacquer topcoat No. 3 applied to various unprimed substrates.

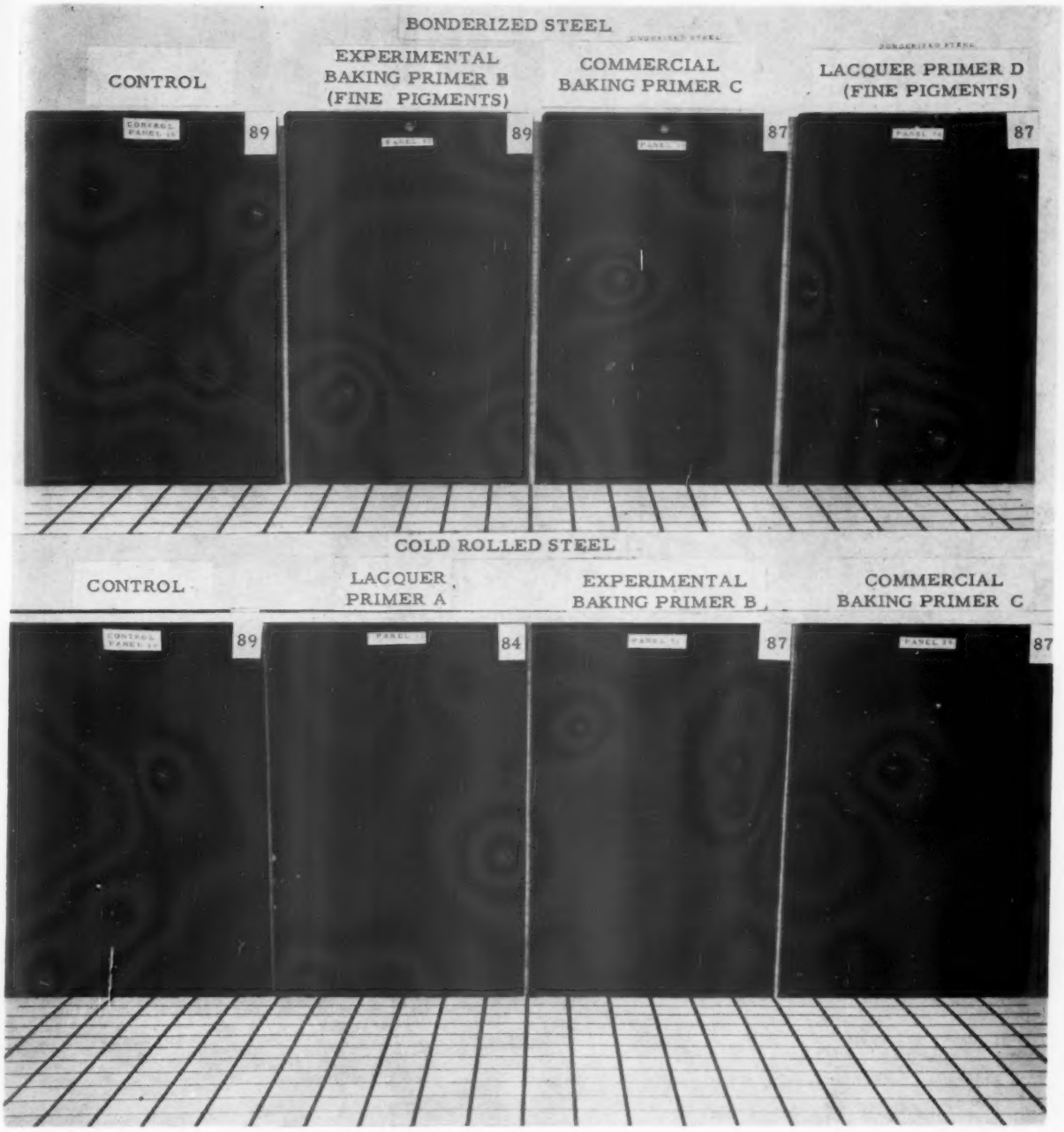

Figure 5. Hot-spray lacquer topcoat No. 3 applied to various primers.

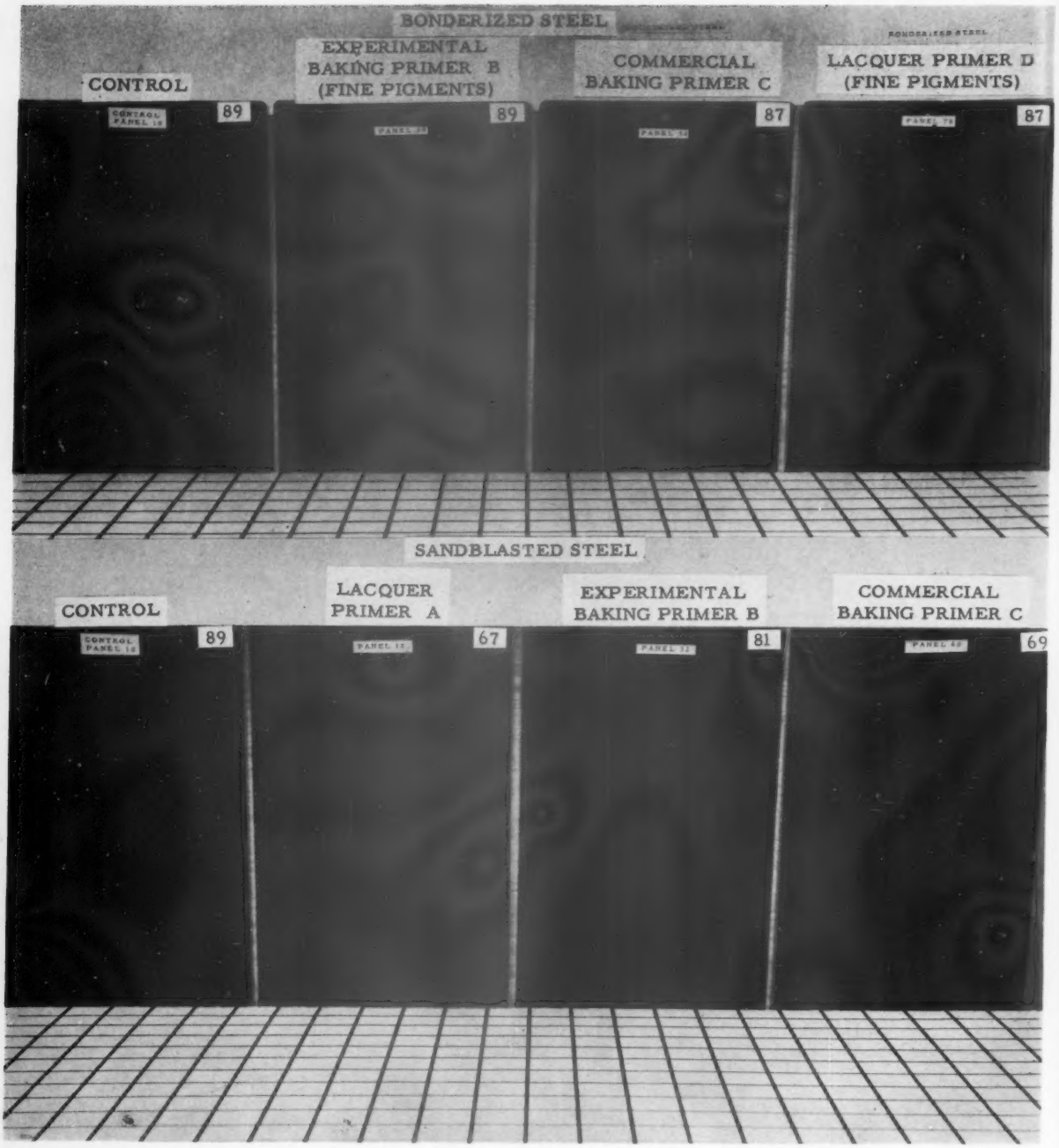

Figure 6. Hot-spray lacquer topcoat No. 3 applied to various primers.

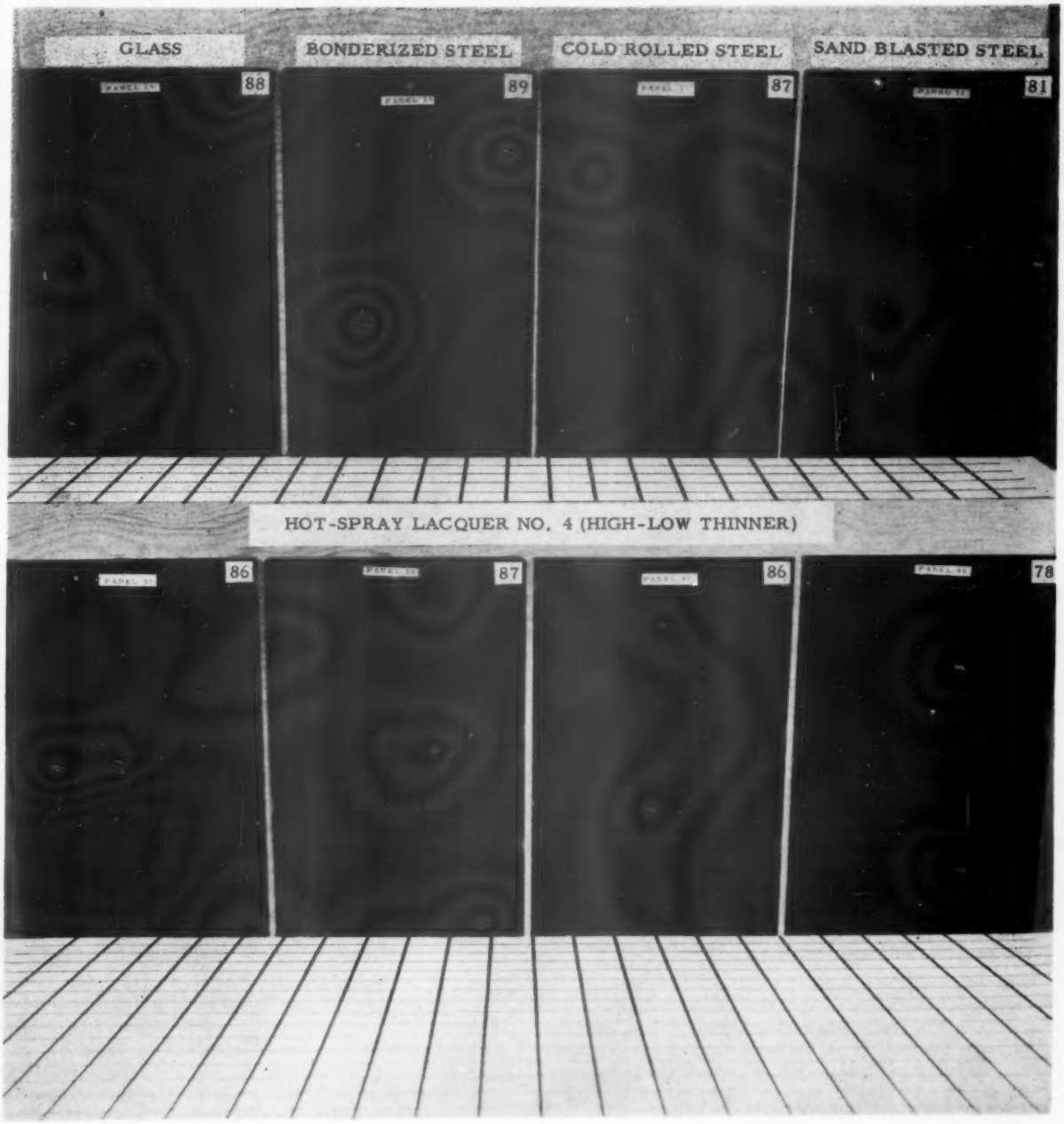

Figure 7. Hot-spray lacquer No. 3 applied to experimental baking primer B on various substrates.

Table IV

GLOSSINESS COMPARISON READINGS — GARDNER 60° GLOSSMETER
AVERAGE OF READINGS ON THREE PANELS

Panel Number	Gloss Reading	Panel Number	Gloss Reading	Panel Number	Gloss Reading	Panel Number	Gloss Reading
1	81	28	75	63	90	90	88
2	87	29	88	64	82	91	78
3	85	30	89	65	86	92	35
4	68	31	87	66	93	93	88
5	85	32	81	67	90	94	90
6	90	33	86	68	76	95	80
7	84	34	88	69	87	96	39
8	66	35	89	70	87	97	89
9	87	36	85	71	85	98	90
10	89	37	86	72	69	99	79
11	84	38	87	73	85	100	35
12	67	39	86	74	86	101	86
13	87	40	78	75	85	102	87
14	89	49	89	76	70	103	82
15	88	50	87	77	87	104	49
16	69	51	86	78	87	105	87
17	88	52	73	79	82	106	86
18	85	53	88	80	60	107	81
19	84	54	89	81	86	108	68
20	69	55	85	82	86	109	83
21	89	56	74	83	87	110	80
22	85	57	86	84	68	111	80
23	86	58	87	85	84	112	55
24	74	59	87	86	87	113	84
25	88	60	69	87	85	114	84
26	85	61	86	88	70	115	82
27	87	62	87	89	90	116	57

resulted in a marked topcoat glossiness improvement over the relatively coarser pigments used in the other primers tested. It is believed that a low-viscosity, high-application solids primer vehicle is a necessary adjunct to provide maximum filling properties (minimum shrinkage) over substrate irregularities.

It is important to note that none of the primers was sanded. It has been shown in other work that sanding generally increases surface roughness of the primer with a resulting loss in glossiness of lacquer topcoats. The degree of this loss is, of course, dependent on the coarseness grade of the sandpaper used and the original surface roughness of the unsanded primer. In many applications it may be practical either to omit the sanding step when a smooth surfaced primer such as Primer B is used, or to use only the least coarse grades of sandpaper.

The ultimate practical objective underlying work on lacquer glossiness has been the improvement of this property to the point where rubbing and polishing operations may be eliminated. The primary markets at which such lacquer coatings would be aimed are those represented by the transportation and heavy equipment fields where the advantages of a fast air-dry coating system would be highly desirable. Whereas the best unrubbed lacquer glossiness has been demonstrated with lacquer topcoats applied over an unsanded, baked primer formulated with fine-particle pigments, it is believed that an acceptable level of unrubbed glossiness can be achieved with properly formulated air-dry lacquer primers. Work on formulation of such primers is being continued by this laboratory.

Conclusions

The relative effects of several variables on the unrubbed glossiness of lacquer coatings have been recorded as a guide to predicting the level of glossiness achievable under production line conditions. It is believed that acceptable levels of unrubbed glossiness can be achieved through control of substrate roughness, primer formulation, and lacquer topcoat formulation.

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(1) Bruxelles and Mahlman, Official Digest 26, Pages 299-314, April 1954.

ZEIN IN PROTECTIVE FLOOR FINISHES

By
T. K. Maher
R. D. Struthers†

THE fields of application in which zein is used are highly varied and involve the following industries: paper, paper finishing, printing ink, cork binding, synthetic fiber, leather finishing, floor and wood finishing, pharmaceutical, rubber and automotive. In a large number of cases the use is for protective or decorative coatings. Typical applications are the coating of paper which will be used to wrap oily machine parts, or coatings on paperboard to be used in the packaging of doughnuts. The zein coating is an economical and attractive grease-proof film which is easily applied. Label varnish manufacturers and the paint and varnish trade take full advantage of the inherent scuff-resistance and toughness of zein films. These characteristics, combined with the excellent gloss of zein films, have aroused the interest of the manufacturers of dry-bright floor finishes.

To illustrate the increased hardness and toughness which zein contributes to shellac, the abrasion resistance of a series of films was measured on a Taber Abraser. The films examined were dewaxed shellac, and mixtures of shellac and zein. They were laid down from alcohol solutions, as zein cannot be dispersed in water without the aid of a dispersing agent.

This paper was presented May 16, 1955, before the Waxes and Floor Finishes Division, Chemical Specialties Manufacturers Assoc., Inc. in Chicago, Ill.

† The authors are connected with the Corn Products Refining Co.

The following discussion is designed to familiarize this group with the unique properties of zein, and to point out how and why this product from corn can contribute desirable properties to a self-polishing floor finish.

The word "zein" is the generic name of the major protein found in the corn kernel. On the basis of solubility in aqueous alcohol, it is classified as a prolamine.

In the manufacturing process, zein is isolated from corn gluten by means of organic solvent extraction. After a chemical treatment of the extract, the zein is precipitated and dried. It is a cream-colored, amorphous powder, having a specific gravity of 1.25 and a molecular weight of approximately 25,000. This material does not have a sharp melting point but it softens in the range of 190 to 200 C. Zein is unusually stable in its resistance to the spoilage frequently associated with proteins.

Data collected were used to plot the curve shown in Figure 1. Where zein is now being used in wax-type floor finishes, full advantage is taken of this characteristic durability.

Zein films can be laid down from organic solvent solutions or from water systems. As water-based formulations are of primary interest to this group, only compositions of this type will be discussed.

Solubility

Although insoluble in water, zein is easily solubilized or dispersed in aqueous alkalies at a pH of approximately 9.5 to 11. Unlike many other proteins it is not dispersed by weak alkalies such as ammonia or borax. An aqueous sodium hydroxide solution in the range of 1.5 per cent is a good zein solvent. Among the agents most commonly used in making up zein water systems are ammonium or sodium soaps or resinates, or synthetic dispersing agents. In the preparation of floor finishing formulations, a number of the more common dispersing agents must be eliminated from consideration because of adverse effects on water resistance. The dispersing agent chosen was a combination of a phenol-modified, alphapinene resin* and ammonium oleate. An overall balance of desirable dispersion and film properties prompted this selection.

Preparing Dispersion

The following is a zein water dispersion prepared with this combination. It is considered a good starting point for the formulation of a dry bright polish:

	Parts by Weight
Zein	100
Modified-pinene resin	100
Oleic acid	35
Aqueous ammonia (28%)	7
Water (initial)	560
Water (dilution)	to give desired solids

*Newport V-40, Newport Industries, Inc.

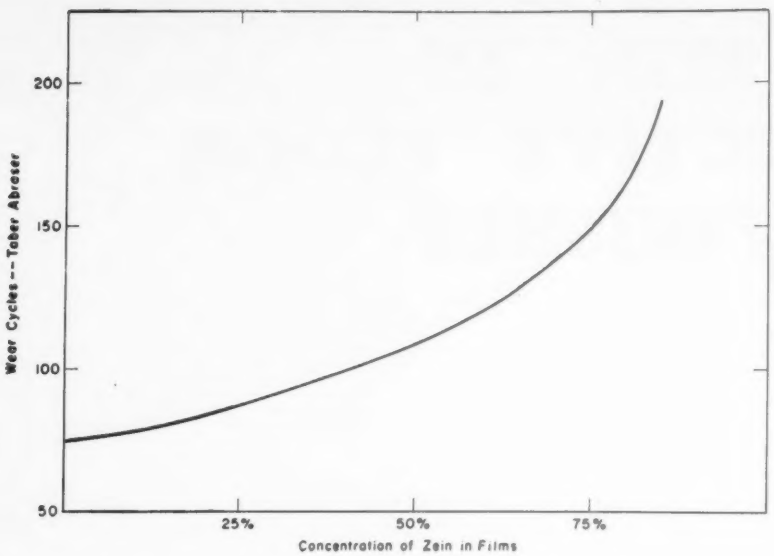


Figure 1. Effect of zein on abrasion resistance of dewaxed shellac.

This dispersion is prepared in the following manner:

1. The resin and oleic acid are melted together. A temperature of 110 to 120 C is recommended. Occasional stirring is beneficial.
2. The melt is stirred into the initial portion of the water (which has been preheated to 70 C) and the ammonia is added.
3. With good agitation, the zein is added rapidly, and the gel-like paste which develops is cooked and stirred for approximately 20 minutes at 80 to 85 C.
4. Dilution water (above 40 C) is added to g ve the desired solids.
5. The pH of the finished system is adjusted to a value of 9 or above with aqueous ammonia.

A large-blade stirrer provides ideal agitation for this preparation.

This zein-resin dispersion is light amber in color, infinitely dilutable, and is water-thin at 20 per cent solids.

This formulation has been examined for two applications:

1. as the basis for a floor finish of the high resin type having little or no wax content;
2. as an extender to be included in convent'onal wax formulations of high or medium wax content.

Stabilities at room temperatures and at elevated temperatures (125 F) have been determined, and the system has been subjected to freeze-thaw tests. Samples remained in good condition after storage on the 'aboratory shelf for over ten months. These were among the first samples of this formulation prepared. Others have remained unchanged after more than 90 days static storage at 125 F. They were not affected by three freeze-thaw cycles.

Properties

This zein-resin dispersion gives hard, clear, glossy films when laid down on glass panels. When coated on TOTL linoleum or asphalt tile, they exhibit good gloss and leveling.

As mentioned earlier, this dispersion is considered to be a starting formulation only. It can be prepared by replacing ammonia with an amine such as dimethyl ethanolamine or triethanolamine. If amines are used, the films are more water sensitive, particularly when freshly laid down. When maximum water resistance is desired, the use of ammonia rather than an amine is recommended. Films from the formulation described above were dried at 70 F and 50 per cent relative humidity for 24 hours and subjected to a water spot test. At the end of one hour the water was removed and the films examined. The water left no mark on the films.

When prepared with ammonia, the formulation gave films which failed to pass the test for removability as prescribed in Federal Specifications T-W-155. The presence of amines in place of a portion of the ammonia aids removability.

The durability of these coatings is excellent. In Table 1, the zein-p nene resin film is compared to a film of bleached, dewaxed shellac laid down from a borax dispersion. The comparison is based on initial gloss, and gloss readings taken at intervals during the abrasion test.

Equal quantities (0.4 ml) of each product were applied over an area of TOTL linoleum (2 in x 4 in). The abrasion tests were carried out with the Gardner washability tester, equipped with a mounted steelwool (Medium-No. 1) pad as the abrading surface.

During the early stages of abrasion, the film containing zein loses gloss more rapidly than does the shellac film, but after 50 abrasion cycles, the gloss of both surfaces is essentially the same. Further abrasion of the zein film results in a buffing action and an improvement in gloss, while the same treatment causes further deteri-

Table 1

Effect of Abrasion on the Gloss of Shellac and Zein-Resin Films

Abrasion Cycles	Glossometer Readings Shellac	Zein-Resin
0-Initial	23	22
25	20	15
50	17	16
75	13	20
100	12	21
125	11	23

oration of the shellac film. Examination of the panels at the conclusion of the test showed that the shellac film had been almost completely removed. The zein coating showed little evidence of wear.

Wax Blends

The zein-pinene resin dispersion can be blended with carnauba or microcrystalline wax emulsions and a number of resin dispersions, including those of fortified rosin**, shellac and polystyrene***. Zein can be used very effectively to increase the hardness and toughness of wax films. Combinations containing as little as 10 per cent, or as much as 80 per cent, wax have been prepared. Comparatively low concentrations of zein give a well developed film-like continuity to wax coatings. Because of excellent compatibility with carnauba and microcrystalline waxes, the zein dispersion can be employed as an extender with a wide variety of combinations of these two materials. Due to the complex nature of many wax formulations, this cannot always be done with the assurance that the resulting system will retain all the desired properties. Although the zein-pinene resin system discussed earlier has good leveling characteristics, combinations with wax emulsions are frequently deficient in this property. The addition of a leveling agent is generally necessary.

It is possible to prepare the zein-resin-wax system by means of a single-cook method, as well as by blending the finished zein-resin dispersion with a wax emulsion. The products obtained by the single-cook procedure have properties comparable to the corresponding blends. The evaluation work discussed below was carried out on formulations containing carnauba wax. Its selection was based on the knowledge that the properties of this wax are familiar to manufacturers of wax polishes.

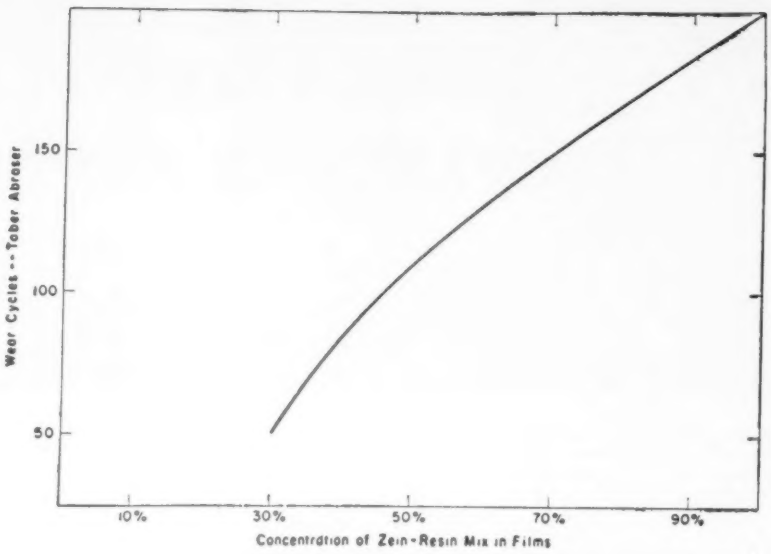


Figure 2. Effect of zein on the abrasion resistance of carnauba wax.

The emulsions of carnauba wax with zein and alpha-pinene resin listed in Table 2 were prepared using a single-cook operation. Formulations I and II are prepared in the following manner:

1. The resin, wax and oleic acid are melted together. Occasional stirring is recommended during this operation.
2. With good agitation, the initial water (preheated to 85 C) and the ammonia are added to the melt. The temperature of the melt is held between 80 and 85 C.
3. After the mixture is homogeneous, the zein is added and the charge cooked for approximately 5 minutes at 85 C. A large-blade stirrer provides ideal agitation.
4. With stirring, this concentrate is added to enough hot (85 C) water to give a finished emulsion having the desired solids.

In the preparation of Formulation III, the first two steps (numbered 1 and 2) are the same as given above. The emulsification of Formulation III is completed as follows:

3. With good stirring, the mixture of melt, water and ammonia are added to 250 parts of hot water (ca. 85 C).
4. The zein is added and the mix is cooked for approximately 20 minutes. Again, a large-blade stirrer is recommended.
5. Sufficient dilution water is added to give an emulsion having the desired solids.

Attempts to prepare Formulation III by the same procedure as employed in preparing Formulations I and II have been only partially successful.

All three of these emulsions are translucent in appearance. Evaluative work was carried out on films formed from a system of 12 per cent solids.

(Turn to page 74)

**Amberol 750, Rohm & Haas Co.
***U-2001 Ubatol, Union Baystate Chemical Co.

Table 2

Formulation	Parts by Weight I	II	III
Zein	15	25	35
Modified-pinene resin	15	25	35
Carnauba wax	70	50	30
Oleic acid	20	20	20
Aqueous ammonia (28%)	9	9	9
Water (initial)	25	25	25+250
Water (dilution)	to give desired solids		

HUGE PAINT PLANT OPENED IN AUSTRALIA

Every Part of The Four Individual Blocks Can Be Expanded For Greater Production

THE BIGGEST paint plant in the British Commonwealth and one of the most modern in the world has been opened in Australia.

Production from this unit, when fully operating, will make Australia independent of mixed paint imports, and will expand the existing trade to neighbouring countries. Large scale exports to South East Asia are visualised.

Costing $3,345,000, the factory has been built by Taubmans Industries Ltd. on a 14-acre site at Sunshine, a suburb of the Victorian capital of Melbourne. Cost of the production plant was $1,344,000, of employees' amenities $134,400, of laboratories and equipment $134,400, and of fire-precaution equipment $224,000.

An essentially Australian enterprise with production plants in four State capitals and another in New Zealand, Taubmans Industries employ 2000 workers.

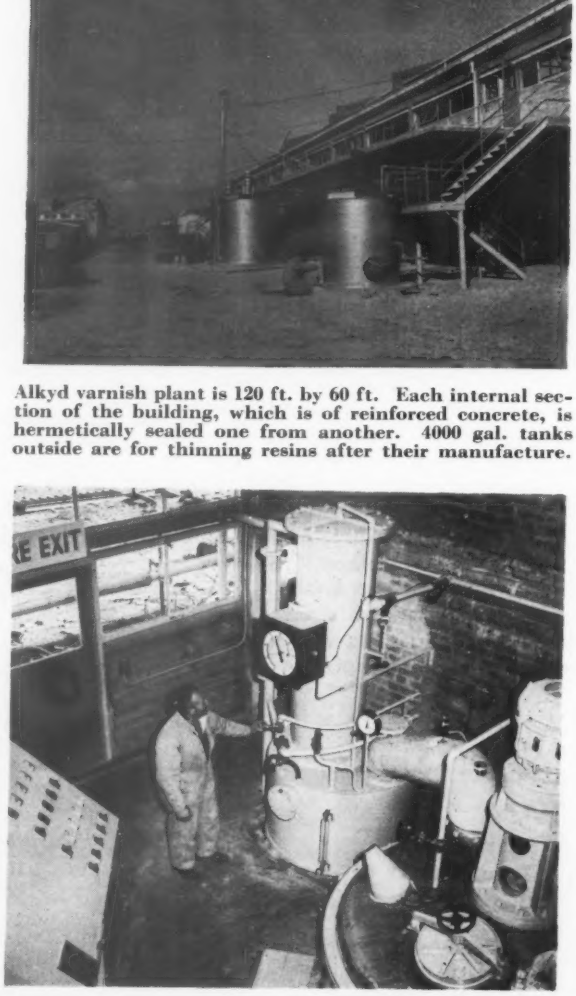
But in the early 1900's there was only George Henry Taubman himself, working in a shed in the backyard of his home in Sydney, capital of New South Wales.

He had set himself up as a paint importer and distributor in 1897, but his early success was nullified within a few years by heavy duties imposed on paint imports.

Guided by the knowledge he had assimilated, Taubman turned to making varnishes at home. Demand increased so rapidly that he soon had his sons Henry and Walter working for him, and, by 1912, had formed a limited company with $13,400 capital.

Before long this company became associated with the world's biggest paint manufacturers— the British Pinchin Johnson group— and thus made contact with about 30 different companies throughout the world.

Alkyd varnish plant is 120 ft. by 60 ft. Each internal section of the building, which is of reinforced concrete, is hermetically sealed one from another. 4000 gal. tanks outside are for thinning resins after their manufacture.



Synthetic resin unit made of stainless steel can produce 1400 gals. of resin in one operation. Left of operator is panel board from which he can control fires, pumps, temperature and air-blast; can see contents in kettle.

This article was prepared by Geoff de Fraga of the Australian News and Information Bureau. Photographs by Neil Murray.

Fourteen automatic solvent pumping units. For safety they are controlled by nitrogen-operated pressure switches. Under each pump is a 3000-gallon tank.

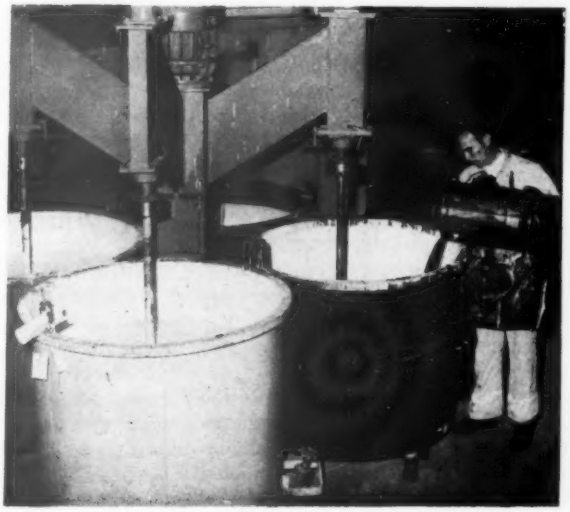
Mixing unit consists of 14 500-gallon and 14 1000-gallon unit-driven paint mixers. Delivery system allows liquid ingredients to be brought directly into each tank mixer.

When George Taubman died in 1938, at the age of 70, his name had become a household word in a country where the national "do-it-yourself" attitude had brought odd cans of paint into practically every home.

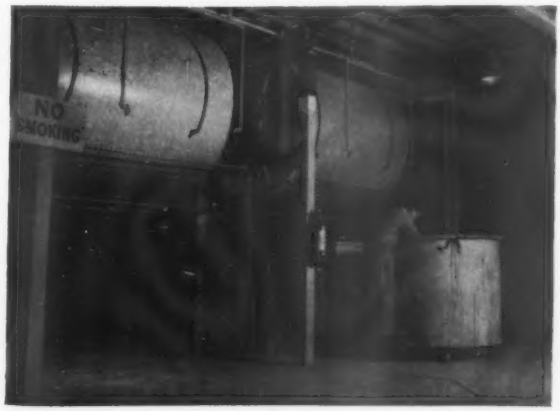
To give the house-proud amateur uniformity of tones in subsequent purchases, Taubmans take special care to keep colour gradings precise, and have introduced in their new plant intricate processes of mixing resins, solvents and chemicals.

Of almost equal interest are the elaborate measures taken to cut fire hazard to a minimum.

Liquid fire-killer—a chemical powder extinguisher—is on hand to smother blazing oils, spirits, solvents and paints. Every tool used at the factory is made of non-ferrous metal to reduce the risk of fire from frictional sparks. A special sprinkler system installed throughout the factory would automatically drench any blaze in a second or two. In "fire-risk" sections, electric ventilating units change the air every minute to stop pockets of vapour forming.



Mixing tanks in the factory. Pipes around the walls save trundling cans of paint, and big ventilator columns remove all odors.



Pigments are ground in huge water-cooled drums, fed from the floor above.

This section of the main laboratory is used for testing raw materials before they are passed into the factory.

LUBRICATED PLUG VALVES

This type of valve for general plant service offers many operating advantages and economies

By
T. H. M. Taylor*

A SIGNIFICANT portion of a plant's operating expense is represented by valve costs, which include initial purchase, maintenance, repair and replacement. In view of today's competitive market, it is important that such costs be kept at a minimum. Wider application of lubricated plug valves for general plant services can offer plant management and engineers substantial cost savings in this respect.

Lubricated plug valves, through long identification with the petroleum and gas industries, have a reputation as precision-engineered and built equipment designed and used for heavy-duty process and plant applications. In a sense, they have been looked upon as the "Cadillac" of the valve family. Yet, they are competitive cost-wise with the more conventional bronze, gate and globe valves.

Both the plug and the gate valve are of the "block" or complete shut-off type, as compared with the globe valve which is used primarily for throttling service. Gate valves can be used for throttling but will not give tight shut-off after they have been used for throttling serivce. Plug valves on the other hand are often used for throttling where accurate adjustment is not necessary. However, for both types the primary service is positive open-close operation.

*Chief Engineer, Nordstrom Valve Div., Rockwell Manufacturing Co.

Design and Construction

There are only three basic parts comprising the plug-type lubricated valve—(1) body, (2) cover, (3) plug—the plug being the only movable member.

While the plug is available both in cylindrical and tapered form, the latter is generally the more preferable. Nothing is simpler for valve actuation than the tapered rotary principle. Since the valve is opened and closed by rotation only, and not by raising and lowering the movable valve member, vital seating surfaces are self-protecting and self-cleaning. The valve does not contain enlarged pockets or recesses to collect sediment, scale deposits or other foreign bodies to interfere with valve action.

The tapered shape of the plug combines the tight fit advantages of wedge action with the sliding action of rotary movement. Properly lapped, the plug is self-seating and self-adjusting for wear.

A lubricated ground joint type of shoulder is used in preference to conventional stuffing boxes which operate by gripping around a stem or rod. The shoulder joint is compact, produces a minimum of friction, and combines the functions of stem seal and thrust bearing.

Application of the shoulder seal principle is the same for the various standard types, i.e., 2-bolt cover, which combines cover and gland in one piece, screwed gland and bolted gland. In all three types thrust against the upper shoulder of the tapered plug is transmitted through a resilient cushion packing and a sealing diaphragm gasket. The sealing member is a thin flexible metal diaphragm of anti-friction and corrosion-resistant material.

The diaphragm assembly is clamped firmly together and does not rotate. As the valve is turned between open and closed positions, the ground surface at the top of the plug slides freely against the metal diaphragm. Leakage is prevented by the lubricated close fit between the two parts and the relatively narrow area of contact through which the plug-sealing thrust is applied.

Quick Opening-and-Closing

One of the outstanding features of the plug valve is its quick-opening-and-closing operation. A quarter-turn fully opens or closes the valve. A stop collar on the valve gives positive indication as to the position for open or close. In this way, the operator does not have to rely on the "feel" of a wheel's resistance to tell if the valve is closed.

The 2-bolt cover type valve has a square wrench head on the plug stem and a stop-and-indicating collar which also serves as a weather shield for the stem clearance space. Other types have a wrench flat or a wrench square plug shank, with a stop collar on the shank and engaging lugs on the

cover or on the shank and bland.

Compared with valve body designs for other types of open-close valves, the lubricated plug valve body is probably the simplest and most compact. There are no high projecting yokes or bonnets, no exposed threads to corrode and no underhanging body to require room below the pipe line. In most cases, the space occupied by the lubricated plug valve is little more than the diameter of the pipe line flanges.

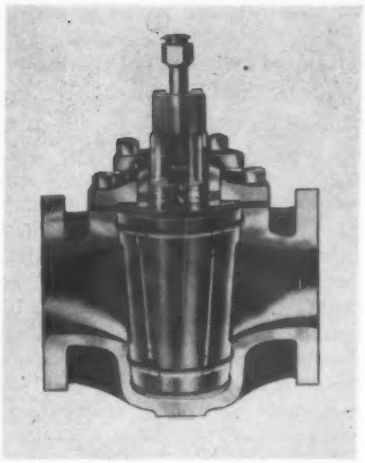
The space economy offered by this type of valve makes it particularly suitable for manifolds for pump houses, under pavements or other places where space is at a premium.

Because the valve does not require large bonnet and body cavities, there is a substantial weight saving. In addition, top-heavy, cumbersome flanges, normally required to support the stress of wedge action above the valve, are not required for the sliding action of the tapered plug.

Plastic Sealing and Lubrication

Pressure lubrication performs three important functions, (1) provides "jacking" action, (2) seals the valve and (3) reduces friction and wear to a minimum.

Lubricant pressure exerts powerful "jacking" action against the smaller end of the valve plug, momentarily unseating it. This action overcomes any adhesion and, because of the taper, creates a small space for a confined lubricant film between the plug and body. As a result, regardless of how long a period a valve is not opened, there is a positive means of unseating the valve, without having to use a hammer or wrench. Further, the "jacking" not only "puts the valve into operation" after long dis-use but provides lubrication at the same time.



Cutaway diagram of typical lubricated plug valves.

It is important to note that unseating occurs *only* at the time of lubrication when lubrication pressure higher than the line pressure lifts the plug; therefore the seat is not exposed to the line fluid. Instead, the seat is actually being flushed clean by fresh lubricant.

Spring action is provided in the valve without the need for complex spring design by the resiliency of the shoulder seal packing.

The usual means of exerting lubricant pressure is an elongated screw, threaded into the outer end of the plug shank. Because of its small diameter and the use of a fine-pitched thread, the lubricant screw develops ample pressure on the lubricant, yet turns freely. These screws are often provided drilled and fitted with giant "button head" fitting for grease gun lubrication.

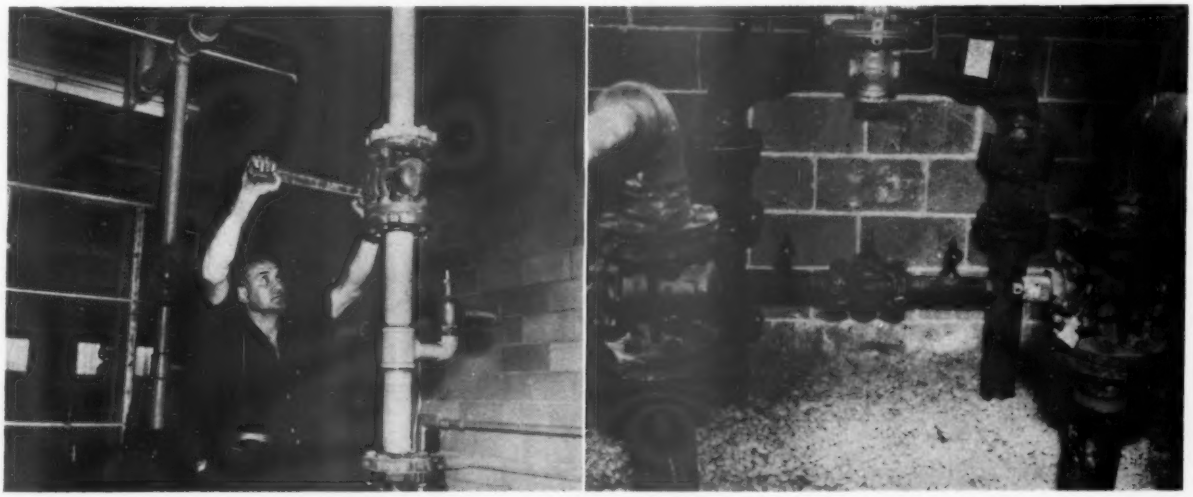
Application

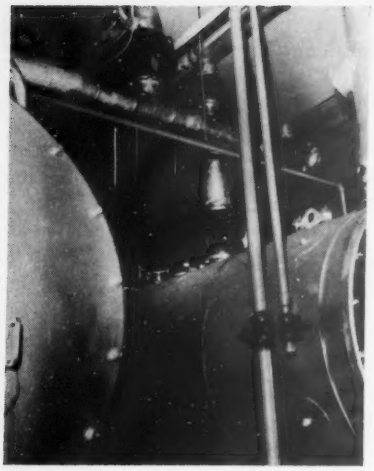
For general plant service lines such as water, compressed air, low pressure steam fuel, hydraulic and so forth, standard semi-steel plug valves can be used. Plug valves are available in patterns interchangeable with standard gate valves. The valves are also produced in a wide variety of metals and alloys for special services involving corrosion, high or extreme low temperature, pressure or other special operating conditions.

The valves are available equipped with every type of standard or special flanges, including Dresser ends. For jacketed service, plug type valves are available with complete flange-to-flange jacketing in standard sizes.

A useful and rather unique characteristic of plug valves is the ease with which they can be adapted for multi-port construction. In the 3-way form, a single L-shaped passage connects any of

Left: Shut-off valve on water supply system. Right: Valve and regulator set-up in gas house where gas supply is metered.





Large valves used on low pressure steam lines and small valves on gas lines.

two ports; with a T-shaped opening any of three ports are connected; and the 4-way type has two cutouts on opposite sides which connect any two adjacent parts of four ports with a quarter turn of the valve.

Plug valve accessories are available in a wide variety of forms to allow complete flexibility in method of installation, operation and servicing. Wrenches for hand operated valves include lever, chain, socket and offset types, and standard electric and pneumatic motor operated units are also available. Valve extensions include turning stem-extensions for wrench handle operation, worm gear shaft extensions watertight gear housing of the road box and sealed top with indicator types, floor stand plant extensions and elevated gearing or cylinders.

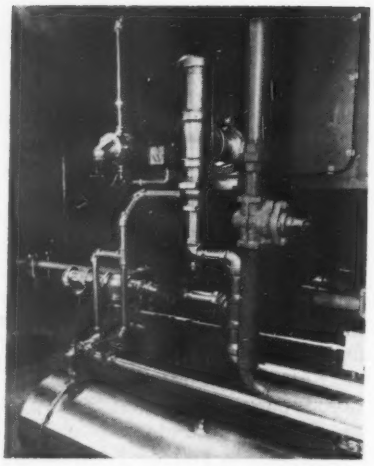
Maintenance

A recent survey of plug-type lubricated valves extending back over a 20-year period has indicated that the ratio of repair and replacement parts is less than 1 to 100. Put another way, lubricated plug valve repair parts over a period of years are about a tenth of the cost of other type valves. This favorable differential is due to the fact that there is little or no need for renewal of seating parts, packings, stems or re-welds.

Because of the tapered plug and lubricant sealed design of these valves, they are not restricted to be installed in either direction because it holds pressure in either direction. Flow can be reversed any time without the danger of leakage or jamming.

This feature means a constantly renewable valve seat. Instead of expensive repairs on seat and closing members, simple lubrication renews the sealing surfaces without necessity of dismantling the valve or even removing it from the line.

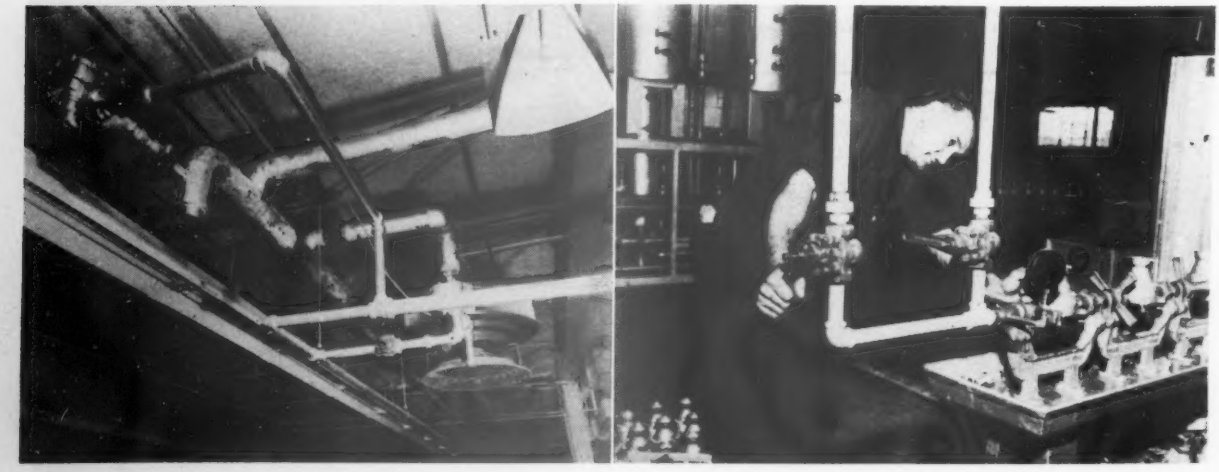
A common hazard to the life of valve seats is the abrasion caused by dust, dirt and debris in the line. This hazard is entirely eliminated in the lubricated plug valve if proper gland adjustment is maintained. Critical seat areas are fully lubricant sealed, and the lubricant is under pressure so that abrasive material cannot intrude. Any dirt or scoring material that may reach the plug is scraped off when the plug is turned back to open position.



Valve on left is shut-off for gas supply to boiler, valve on top is for hot water.

Regardless of the line pressure, the plug valve can be relubricated as effectively as with no pressure. Lubricant injection builds hydraulic pressure within the valve to the required degree. In this way the plug can always be effectively lubricated and the jacking chamber under the plug adequately pressurized to permit easy turning. As a result, even if a plug type lubricated valve is unopened for extended periods of time, it can be easily opened, without difficulties of galling or freezing.

Left: These valves are used in heating system on low pressure steam. Right: Valve arrangement on the high and low pressure water supply to small test stand.



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The "COLD-MIX" method is unique to BAKELITE Brand Phenolic Resin BR-9400. Of all 100% phenolic varnish resins tested, BR-9400 is the first of this type to permit this economical varnish preparation. Tests to date indicate quality equivalent to cooked varnishes. Procedure is simple. Results are excellent.

"Cold-Mix" coatings exhibit exceptionally fast surface dry, through dry, and produce hard, resistant films. Like standard cooked BR-9400 varnishes, they are gas proof, non-reactive with basic pigments, have good package stability, and excellent resistance to skinning.

Now you can obtain the greatest possible formulation flexibility with a minimum inventory. The abrasion resistance, drying speed, hardness, and water spotting resistance of economical coatings can be improved over an extremely wide range while maintaining only a basic stock of varnishes.

Send today for Temporary Technical Bulletin No. 227. Description, applications, manufacturing procedure, and suggested formulations are outlined. Write Dept. BK153

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BRAND
Vinyl, Phenolic, Epoxy and Styrene
RESINS for COATINGS

BAKELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

NEWS

ACS Announces Program For Minneapolis Meeting

The Division of Paint, Plastics and Printing Ink Chemistry of the American Chemical Society announces the following program to be held in Minneapolis, September 11-16:

"Organic Coatings for Use With Cathodic Protective Systems"—Dr. A. C. Elm, New Jersey Zinc Co., Palmerton, Pa., Chairman; Thomas P. May, International Nickel Co., and Arnold Eickhoff, National Lead Co., additional panelists.

"The Chemistry and Physics of Drying Oils and Resins"—Dr. Robert T. O'Connor, Southern Regional Laboratory, Southern Utilization Branch, Department of Agriculture, New Orleans, La., Chairman.

"Phase Equilibria in Polymer Systems"—Dr. William von Fischer, Department of Chemistry, Case Institute of Technology, Cleveland, Ohio, Chairman.

•

Reichhold Making Resins From Isophthalic Acid

Alkyd resins made from isophthalic acid for the first time are being manufactured in limited quantities by Reichhold Chemicals, Inc., after 18 years of research, it was announced in mid-August.

Paints with greater exterior durability, which dry faster at equal oil lengths and have more flexible films, and with less tendency to "skin-dry" will be possible with the new alkyd resins of isophthalic acid, Reichhold declared. Reichhold has been studying the possibilities of isophthalic in conjunction with Oronite Chemical Co., San Francisco, producers of the acid, since it was a laboratory curiosity in 1937.

Reichhold said it hopes to have a steady supply of isophthalic acid beginning in October and that it intends to begin full-scale production of the new resins immediately thereafter.

Dr. C. F. Kettering

Dr. C. F. Kettering Will Keynote Fed. Meeting

Dr. C. F. (Boss) Kettering, research consultant to the Research Laboratories Division of General Motors Corp., and one of the world's most outstanding spokesmen for industrial research, will present the Keynote Address at the 33rd Annual Meeting of the Federation of Paint and Varnish Production Clubs at the Hotel Statler, New York City, on October 3, 4, and 5.

Dr. Kettering, who has headed and directed research organizations since 1909, has been noted for his tackling of problems deemed insolvable and of projects considered impossible on the basis of past experience and knowledge. His insistence on working only from positively known basic fundamentals coupled with liberal experimentation has made possible many achievements which were thought by others to be impossibilities. His purpose frequently has been to solve the problem for the sake of solving it, rather than to work toward a specific goal. This attitude has often resulted in a broadening of the experimental work and resulted in new and unexpected developments.

Some of these developments have been: electrically operated cash registers, the automotive self-starter, tetraethyl lead, high-compression automobile engines, improved automotive finishes, Freon refrigerant, two-cycle diesel engines, an artificial therapy device, and a considerable amount of information on chlorophyll and photosynthesis and on cancer.

Milliken of Hercules Retires

Mahlon G. Milliken retired July 31 as a vice president and member of the executive committee of Hercules Powder Company. He will remain as a member of the company's board of directors until the year-end.

An outstanding figure since the early years of cellulosics development, he invented and perfected the Milliken Continuous Digester for the production of nitrocellulose, which eliminated the slower and dangerous batch method. Nitrocellulose, as a basic ingredient of lacquers, made his invention vital to the automotive and many other industries which use lacquers in great quantities.

Twenty-eight individual laboratories will house research in the fats and oils field in the new Twitchell Memorial Laboratories built by Emery Industries, Inc., Cincinnatti, Ohio. The new three-story building contains New Chemical Labs, Fatty Acid and Esters Labs and other departments researching products for Emery's fatty acids.

NEWS

1955 Paint Industries' Show Sold Out

Exhibit space in the Paint Industries' Show of 1955—to be held at The Hotel Statler, New York City in New York, October 3, 4, and 5 has been completely sold out. The Show will be held in conjunction with the 33rd Annual Meeting of the Federation of Paint and Varnish Production Clubs.

The announcement was made by P. J. Whiteway, Jr., chairman of the Federation's Show Committee. Mr. Whiteway stated that the sellout assures those attending the Annual Meeting of the Federation an excellent presentation of technical advances in those industries supplying the paint, varnish, printing ink, and allied industries. The technical advances may relate to new products, new knowledge relating to existing products, and their uses or existing knowledge which is not generally available to consuming industries.

Anticipating a record-breaking attendance, the Show Committee has scheduled the Paint Show to be open two evenings. This arrangement will allow a maximum number of visitors to see the Show without missing any of the technical sessions. The daily viewing hours of the Show will be as follows: Monday, October 3rd—1 P.M. to 9 P.M., Tuesday, October 4th—9 A.M. to 5 P.M., Wednesday, October 5th—1 P.M. to 9 P.M.

•

Velsicol Forms Trade Unit

Velsicol Corporation has announced the formation of a separate company—Velsicol International Corporation, C. A.—to handle its expanding foreign trade activities. Its main office will be in Chicago, a branch in New York.

The new corporation will assume responsibility for foreign sales of Velsicol resins, solvents and saturants. It will be headed by E. T. Collingsworth, Jr., who retains his post as Vice President and General Manager.

Addition to Kentucky Color plant for production of pigment water dispersions.

Kentucky Color Producing Water-Dispersed Pigments

Kentucky Color & Chemical Company has announced the addition to its regular dry color operation of a department for production of water dispersions of organic, inorganic, and oxide pigments. The company expected to be in full production the first week of this month. Samples for laboratory evaluation are now available.

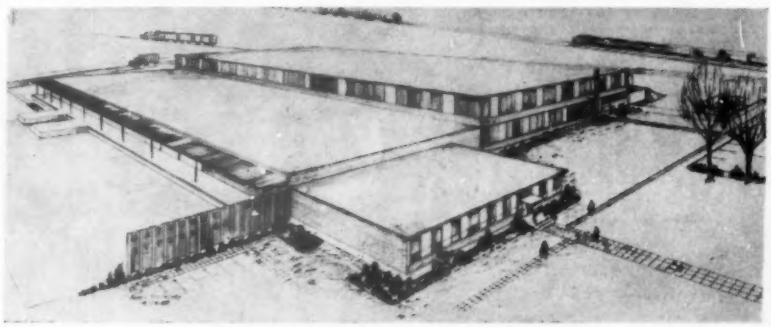
Heading Technical Sales and Research in the new department is John G. Smith; plant production is under Paul Tudder. Mr. Smith formerly worked as development chemist in pigment dispersions with United Wallpaper. Mr. Tudder, also from United Wallpaper, where he was engaged in production of color dispersions, previously worked in General Dyestuff Corporation's New York laboratory.

National Gypsum To Open New Paint Plant in N. J.

Details of the new paint plant it will open in Raritan, N. J., were released by National Gypsum Company last month. The new plant, to be completed in November, will be the fortieth in National's chain of operations, undergoing a recently-announced $75 million expansion.

Described as "the most modern and highly mechanized in the paint industry," the plant will manufacture cold water paints and paint products under the Gold Bond trademark, employing some 80 people. Its first floor area of 40,000 square feet will house storage space for finished products, and packaging and shipping departments. Raw materials storage and mixing operations will occupy 20,000 square feet on the second floor. Offices will be located on the 40,000 additional square feet of the ground floor level.

A unique feature of the new plant will be rail and truck loading facilities on both floors.



Architects drawing of new National Gypsum paint plant.

PHILLIPS 66

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Choose Soltrol 130 for its fast drying characteristics. Use Soltrol 170 if you want longer wet edge.

Soltrols are available in 4,000 or 8,000 gallon tank cars, or in 6,000 gallon compartment cars containing both Soltrols. Phillips customers enjoy prompt service and dependable supply at all times. Write for complete information.

FREE TEST SAMPLES

Like to test Phillips 66 Soltrols? We'll gladly send you samples for evaluation. Just tell us how much Soltrol you need to prove to yourself the advantage of *odorless* Soltrols in your products.

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BARTLESVILLE, OKLAHOMA

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NEWS

N. Y. Club Hears About Tech. Comm. Activities

The September 1955 Meeting of the New York Paint and Varnish Production Club was held on Sept. 8th at the Brass Rail Restaurant, 100 Park Ave., New York City.

The meeting was devoted to a discussion of the activities of the Technical Committee of the New York Club. This committee, under the chairmanship of Anthony Skett, has been characterized by him as "probably the largest active coordinated group of technical men within the coatings industry working on technical problems for the benefit of the industry at large."

Chairmen of the various subcommittees presented reports on their activities during the past year, the present status of their work, and the future direction their committee work is likely to take. Included among the discussions presented was the following:-

J. L. Spector—"Emulsion Paints"
H. E. Hillman—"Flat Paints-Stain Removal and Washability"
R. L. Whitney—"Pigment Dispersion"
S. L. Davidson—"Color Matching in Production"
E. G. Shur—"Solvents"
Sid Levinson—"Interior Sub-Strates and Their Preparation for Painting"
L. A. Melsheimer—"Hiding Power of Pigments"
Royal Brown—"Effect of Ultra-Violet Light on Properties of Lacquer Films"
William Stewart—"Methods for Measuring Drying Time"
Werner Klugman—"Industrial Engineering in the Paint Industry"

In addition, S. L. Davidson and E. G. Shur presented short summaries of the papers they have prepared for presentation at the convention this Fall, dealing with the accomplishments of their respective sub-committees.

First tank car of Glycerine produced by Dow Chemical's new Freeport, Texas, Synthetic Glycerine Plant arrives at the Schenectady Varnish Co. plant July 24, where it headed for synthetic resin production. Shown above are: J. Day, Sales Manager, Chemical Division of Dow in N. Y., N. Y.; H. D. Wright, Executive Vice President, Schenectady Varnish; L. B. Grant, Manager, Dow's N. Y. office, E. L. Martinez, Dow Sales Representative, and G. B. Tod, Secretary of the Schenectady Varnish Company.

That's all it costs to remove the odor from your paint with Maskit #2

- Makes your paint more acceptable to painters *and* home owners.
- Masks the odor in the can and while paint is being applied . . . as well as during – and after – the drying period.
- Does not affect drying time or color durability.
- Amazingly economical . . . use 1 lb. of Maskit #2 to 150 gallons of paint.

MASKIT #2 is equally effective in paints, lacquer thinners, varnishes and other similar types of products. ***Order a trial pound today!***

$1.50 lb.

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NEWS

Plaskon Distributor Named

The Barrett Division of Allied Chemical & Dye Corp. has announced the appointment of R. L. Ferguson Company, Milwaukee, as exclusive sales representative for "Plaskon" Coating Resins in the Wisconsin market. The Ferguson Co. will offer Barrett customers in that area warehousing facilities for the Plaskon alkyd, phenolic, melamine, urea and silicone-alkyd type coating resins.

J. E. Davis Dies At 46

James Edward Davis, 46, Vice President and Secretary of the Pennsylvania Color & Chemical Co., died in July. Mr. Davis was a Past President of the Philadelphia Paint and Varnish Production Club.

•

Correction

On page 35 of our August number there appeared a report on "Flame-Retardant Plasticizer for Protective Coatings." This report was prepared by R. J. Polacek and E. H. Holmstrom of the Chemical Div., Celanese Corp. of America. Our apologies for the incorrect spelling of R. J. Polacek's name which appeared in the footnote of the article.

Data, condensed.
Subject: Extenders.

Thousands upon thousands of words have been written on the role of "inert extenders" in today's new formulations, new bases, new kinds of paint. But here—compressed into 57 second's worth of time for quick review—are the important physical properties which give Dicalite materials their great value, in paints of all types, varnish, lacquer and enamel.

RANGES DEPENDING ON GRADE

BULKING VALUE: 16.7 to 19.4 lbs./gal.
DENSITY: 7 to 13 lb./cu. ft. loose weight. Actual specific gravity 2.00 to 2.35.
MOISTURE, Maximum: 0.5 to 6.0%.
PARTICLE SIZE: Fineness varies from 0.5% to 21.0% retained on 325 mesh screen.
SURFACE AREA: 7,000 to 150,000 sq. ft./lb.
GARDNER-COLEMAN Oil Absorption: 95 to 180.
COLOR: Cream white, buff pink and pure white.
WETTABILITY: Excellent.

Added to these properties is the unique interlacing, "breathing" film formed by Dicalite's tiny, porous particles. All together, they provide the following advantages: (1) Excellent flatting effect, to any degree desired, without critical formulation (2) faster drying (3) elimination of blistering and peeling, due to the Dicalite "film" which allows moisture escape but prevents moisture entrance. (4) improved brushing out and leveling properties (5) desired hiding power with less prime pigment (6) increased strength and flexibility of the paint film.

These are only the principal advantages of Dicalite Inert Extenders—there are others. Write for more information.

Dependable GLC GREAT LAKES Dicalite DIATOMACEOUS MATERIALS

DICALITE DIVISION, GREAT LAKES CARBON CORPORATION, 612 SOUTH FLOWER ST., LOS ANGELES 17, CALIFORNIA

Ford Maps Expansion of Paint, Vinyl Development

Plans to expand the development, formulation and applied research of paint, vinyl and other chemical products at its Highland Park plant were announced in August by the Ford Division of Ford Motor Company. The announcement came from Earl G. Ward, manager of the Division's Associated Operations.

W. T. Thies

Directing the accelerated program of expansion will be William T. Thies, former research manager of the Cooke Paint & Varnish Co., who will report to C. L. Wallace, Paint and Chemical Products plant manager. Mr. Thies, a veteran of 21 years in the paint industry, will become manager of product development at the Paint and Chemical Products Plant, Highland Park.

Mr. Thies started his career in 1934 with Cooke Paint and Varnish in Kansas City as a chemist and color technician. He later came to that firm's Detroit office and worked in the automotive research laboratory on studies of new colors, pigments and enamel resins.

From 1938 to 1942 he worked for the Rinshed Mason Company in Milford, Mich., as a formulating chemist and served, for a short time, as lacquer plant manager. In 1942 he returned to Cooke as research manager. After the war he helped re-establish Cooke's paint program until his association with Ford.

•

N. Dakota Graduates Meeting

An informal meeting of the chemistry graduates of the North Dakota Agricultural College Paint School will be held at the Statler Hotel, New York City, on Tuesday, Oct. 4th at 1:30 P.M. to celebrate the 50th anniversary of the School of Chemistry. All graduates, former students and faculty members are urged to make plans for this special meeting.

how Titanox field tests help you make paints that stay...

in the pink of condition

Seems as if everybody's been doing it for years testing exterior paints, that is. But not like the Titanium Pigment Corporation.

Titanium's Testing Station at Sayville, Long Island, is the first with the most. First of its kind to test titanium pigmented paints. And certainly it keeps tabs on the most. On 20 acres, 30,000 paint panels take a beating from all kinds of weather. All types of formulations are studied on all sorts of surfaces—woods, metals, masonry, etc. How well do they stand up? What are their outstanding qualities? Titanium gets the answers. And that helps us help our customers make longer-lasting, fade-resistant, more durable paints.

Feel free to call on our Technical Service Department for help with your exterior paint pigmentation problems. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Houston 2; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 14, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

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NEWS

Say Color Can Affect Apparent Size of Surface

"Conclusive demonstrations" that color can definitely cause increases or decreases in the apparent size of surfaces by at least 13.5 per cent have been announced in the findings of a research project conducted by the Psychological Laboratory of the Johns Hopkins University Institute for Cooperative Research in collaboration with the Pittsburgh Plate Glass Company.

In the project, people ranging in age from 14 to 55 years were used as observers. They included skilled, unskilled, and clerical workers, university and secondary school students, and housewives. Only observers with normal visual acuity and color vision were used.

The study shows conclusive percentages in size changes based on carefully controlled color comparison tests. "We cannot say," according to the Johns Hopkins psychologists, "that 'red' can make a given surface look larger and 'blue' can make it look smaller. We must state which red and which blue we are referring to."

Esterification with— ARGO® BRAND METHYL GLUCOSIDE

Superior coating resins can be made with Methyl Glucoside, which has been found to contribute fast bodying and drying characteristics.

In tall oil and fatty acid esterifications, Methyl Glucoside gives esters of higher viscosity and faster drying film characteristics than can be obtained with non-cyclic polyols.

Methyl Glucoside is a new crystalline, cyclic polyol; available in 100-lb., multiwall paper bags. Samples and technical literature are available on request.

"Fine Chemicals from Corn"

Chemical Division

CORN PRODUCTS REFINING COMPANY

17 BATTERY PLACE • NEW YORK 4, N. Y.

Paint Technology Awards Announced by N. Y. Groups

Cash awards of $100.00 and $50.00 will be made to students of Paint Technology in the New York area for the best and second best papers submitted in competitions sponsored by the Joint Educational Committee of the New York Paint, Varnish, and Lacquer Association, and The New York Paint and Varnish Production Club. A separate competition will be held at each of three colleges: Polytechnic Institute of Brooklyn, New York University, and Newark College of Engineering. First and second awards will be made for papers submitted at each college, provided papers meet qualifications established.

Details regarding requirements for the papers will be made available to students at time of registration. The increasingly technical character of the many new architectural and industrial paints provides excellent opportunities for technically trained men in the paint industry, according to the Joint Committee.

•

Panel Discussion Slated For Federation Meeting

"An Evaluation of PVA, Acrylic, And Styrene Butadiene Emulsion Paints" will be discussed by a nine-man panel at the 1955 Annual Meeting of the Federation of Paint and Varnish Production Clubs to be held October 3-5 at the Hotel Statler in New York City.

The panel members are as follows: Moderator, Benjamin Farber Farnow, Inc.; Gerould Allyn, Rohm & Haas Co.; John C. Becker, Celanese Corporation of America; Frank Foxlee, Bakelite Co.; Lawrence Horan, National Starch Products, Inc.; William C. Parle, California Ink Co.; Fred K. Quigley, Jr., Dow Chemical Co.; Ed Scholl, Beechnut Packing Co.; and Fred B. Stieg, Titanium Corp.

In order to handle the discussion effectively, it has been requested that questions for the panel be sent in advance. They may pertain to use of emulsion paints, their storage stability, and methods of manufacture. Address Benjamin Farber, Moderator, Emulsion Paint Panel, c/o Farnow, Inc., 4-80 47th Road, Long Island City 1, N. Y.

THE OLD AND THE NEW—These unretouched photographs tell the story. At the left is regular "low-dusting" PE, at right, Hercules' new nondusting grade.

HERCULES HAS REMOVED THE "DUST" FROM PE

Hercules' new nondusting technical PE is now available in full commercial quantities—at no increase in cost!

This new grade of Hercules® technical pentaerythritol has a more uniform particle size. There is no change in its carefully balanced chemical specifications, but through entirely new mechanical processing methods all fines and "smoke" are eliminated.

The result is greater safety, better working conditions (especially during charging), and more uniform reactions because fewer fine particles collect on the dome of the kettle and in the condensers.

Specify the new Hercules nondusting grade on your next PE order and see the difference for yourself. For further information, contact your nearest Hercules district sales office, or write:

Synthetics Department
HERCULES POWDER COMPANY
INCORPORATED
926 Market Street, Wilmington 99, Del.

SPSS-1

"Celanese Plastics Division Technical Service will help you formulate low-cost vinyl latex type paints and primers"

with **Celanese* PVAc** polyvinyl acetate emulsions

No matter what type polyvinyl acetate resin you are now using or planning to use, Celanese is the producer to depend on—for speed of delivery, quality of product and expert technical assistance with your formulating.

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Celanese PVAc is the product of the Plastics Division—pioneer in paint and lacquer components. Technical Service Personnel are ready to get together with your chemists—to help you produce the best formulations for your purposes. Fill in and return coupon below for paint formulation information.

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Plastics Division, Box 165-I
290 Ferry Street, Newark 5, N. J.

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Please send me:

- ☐ Bulletin NP-12 on CL-100 for paints
- ☐ Sample Celanese PVAc Homopolymer CL-100
- ☐ Bulletin NP-14 on CL-202 for paints
- ☐ Sample Celanese PVAc Copolymer CL-202

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Prove the PVAc facts yourself at Celanese Booth #7, 1955 Paint Industries' Show, October 3-5, Statler Hotel, New York

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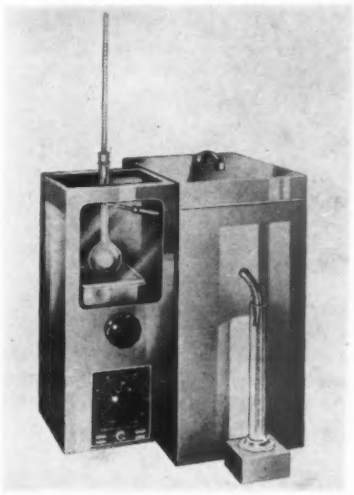
PLASTICS and RESINS

*Reg. U.S. Pat. Off.

NEW MATERIALS & EQUIPMENT

A MONTHLY MARKET SURVEY

This section is intended to keep our readers informed of new materials and equipment. While every effort is made to include only reputable products, their presence here does not constitute an official endorsement.



LABLINE

LAB DISTILLATOR
Allows Accurate Tests

The "Clear-Vue" Distillator is claimed to be a development in distillation apparatus which is said to feature a quarter turn condenser tube permitting the distillation shield to be set flush with the condenser. This construction is said to permit complete unobstructed observation of all receiving flasks, allowing the operator to make more accurate tests. Labline, Inc., 217-221 N. Desplaines St., Chicago 6, Ill.

FERRITE RED
Yellow Undertone

Pure Ferrite Red, designated #401, has a yellow undertone and is the lightest and brightest in the producer's line of Ferrite Reds. Test samples and analysis are available upon request. Smith Chemical & Color Co., 55 John St., Brooklyn 1, N. Y.

PAINT ADDITIVES
Improves Film Properties

"Viscatone 649" and "654" are claimed to function to identically a heavy bodie doils to give ideal working properties to oil and alkyd base paints, enamels, and flat wall paints including odorless types. Further, they are said to create a system that is work sensitive. The work of application induces flow for a sufficient length of time for the film to level out. Sagging, running, and pigment settling are discouraged.

Company says that "649" and "654" should be added to the grind. A certain amount of work is required to disperse and bring about a stable equilibrium. The shearing action of grinding will establish this equilibrium instantly, according to the company. Quantities used vary from .03 to .10 lbs per gallon of finished product. When used with "Bentone 34," ratios of "Viscatone" to "Bentone" range from 1 to 2 or more parts "Viscatone" to 1 part "Bentone 34."

"Viscatone 649" and "654" are not compatible with lacquer or emulsion products. They are intended for use in oil or alkyd containing predominately non-polar solvents. Viscatone Chemical Co., Zeigler, Ill.

TUBULAR FILTERS
Low Maintenance

Line of Tubular filters are designed to bring simplified operation and very low maintenance to smaller filtering problems. Advantages claimed are: liners are easy to replace; may be used for intermittent or continuous operation; solids can be recovered in dry form; can be used with or without pre-coat; and simple maintenance. Standard sizes provide for units from 1 to 36 tubes with filtration areas from 2.4 sq. ft. to 86.4 sq. ft. Industrial Filter and Pump Co., 5904 Ogden Ave., Chicago 50, Ill.

TORSION

LAB BALANCE
Capacity 200 gms.

Feature of model LA-3 laboratory balance include torsion bands made of Elgiloy, a single beam vernier is said to permit accurate readings from 0.01gm. to 10gm. without the use of loose weights. An oil damper reduces balance oscillations, thereby speeding up the weighing operation. Stainless steel calibrated beam assembly of the new balance is positioned directly over the torsion mechanism to minimize the effects of vibration. The Torsion Balance Co., Clifton, N. J.

FATTY ACID AMINES
Odorless And Light In Color

A group of fatty acid amine condensates with greatly increased activity, is marketed under the name of "Monamid 150 Series."

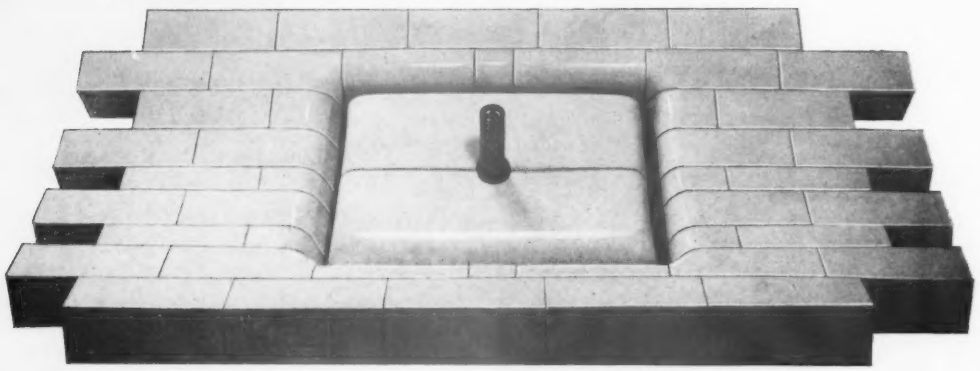
Compared with conventional fatty acid amine condensates these contain up to 50% more amide than products sold previously as 100% active, according to the manufacturer.

They are claimed to be practically odorless and extremely light in color. Company recommends them for detergency, wetting, foaming, emulsifying, thickening, stabilizing and dispersing for every industry, where these actions are of importance at minimum cost. Mona Industries, Inc., Chemical Div., Paterson 4, N. J.

McDANEL

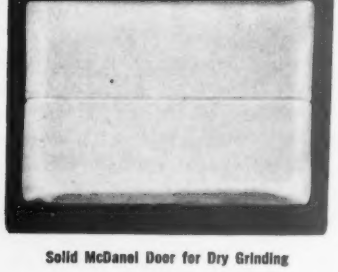
MILL HEAD ASSEMBLIES

COVER *all* METAL—keep batch pure



View of McDanel Special Frame Brick and Door Blocks

View of McDanel Combination Grinding and Discharge Door



Solid McDanel Door for Dry Grinding

● McDanel Mill Head Assemblies allow no metal to contaminate mill charge. Specially designed, overhanging-type frame brick and door block completely cover all metal parts. McDanel Mill Head Doors need not be removed to discharge when wet grinding. Replace grinding plug with perforated discharge plug for quick, easy discharge. No partially ground material around door can unbalance the batch uniformity. Dry grinding door is identically the same except for hole in the center. Your old doors can easily be replaced with new McDanel doors.

Write For Your McDanel Industrial Porcelain Catalog Today!

McDANEL *Industrial* PORCELAINS

McDANEL

REFRACTORY PORCELAIN COMPANY

BEAVER FALLS · PENNSYLVANIA

NEW MATERIALS — EQUIPMENT

LIQUIDOMETER

TANK INDICATOR
Remote Reading

Remote reading tank contents indicator is especially designed for applications where panel space is limited. Known as Model 216, this dial type instrument has a scale length of 20 inches although occupying a panel space of only 3 x 10¼ inches. Available for either horizontal or vertical panel mounting. This indicator is used with the company's automatic hydraulic actuated tank contents gauging systems. Approved for gauging hazardous liquids by the Underwriters Laboratories. The Liquidometer Corp., 41-03 36th St., Long Island City 1, N. Y

IMPREGNATING VARNISH
Silicone Type

Silicone varnish is said to greatly improve physical properties at temperatures up to 250 deg C. Resin will cure at 150 deg. C. as rapidly as other silicone varnishes cure at 250 deg C. Low viscosity provides good penetration into electrical equipment and shows much less weight loss than conventional varnishes when tested at 250 deg. C.

Designated SR-60 silicone varnish, this resin is recommended for impregnating and bonding electrical equipment such as stator and armature coils, aircraft generators, dry-type transformers, and glass asbestos served wire. SR-60 has been designated for application on Class H equipment (180 deg. C. hottest spot), although its ability to cure at lower temperatures makes it suitable for Class B equipment (130 deg. C. hottest spot). Silicone Products Dept., General Electric Co., Waterford, N. Y.

REDS

more of them...
and better made!

58
SHADES AND TYPES

PURE RED IRON OXIDES
KROMA REDS®
(6 Shades)
"100" SERIES REDS
(6 Shades)
"1000" SERIES REDS
(12 Shades)
RY SERIES REDS
(4 Shades)

RED IRON OXIDES
(18 Shades)

VENETIAN REDS
(12 Shades)

Whenever red is the question, be sure to see your Williams representative. Meanwhile, send today for complete technical information.

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NEW MATERIALS — EQUIPMENT

DIAMINES
Resin Stabilizers

Three diamines, derivatives of Nitroparaffins, are suggested in such applications as curing agents for epoxy resins, as an alkaline catalysts, stabilizers for melamines and other resin finishes. Each of the three diamines contains one primary and one secondary amino group, and other reactive groups can be easily incorporated into molecule. Commercial Solvents Corp., 260 Madison Ave., New York 16, N. Y.

CURING AGENT
For Epoxies

Curing agent can extend use of "catalyzed" Epon resin paints, especially under adverse weather conditions, according to the manufacturer. This product, Curing Agent C-111, is a "cold" type. It is claimed that paints cured with it at room temperature exhibit film properties of chemical and physical resistance ordinarily achieved in baked surface coatings. Product is said to eliminate or reduce "curing agent blush" on films cured under conditions of high humidity. Second, it gives an excellent rate of cure at temperatures well below room temperature—as low as 35-40 deg. F. Available in trial lot quantities. Details on the use of this curing agent are given in Technical Bulletin SC: 55-32. Shell Chemical Corp., 50W. 50th St., New York 20, N. Y.

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OUTSIDE HOUSE PAINTS	to aid pigment suspension, increase shelf stability, improve brushability.
SOLVENT TYPE RUBBER BASE PAINTS	for pigment suspension and color uniformity with low vehicle demand.
INDUSTRIAL PAINTS	to reduce flow and sagging, promote color uniformity and pigment suspension.
SHINGLE STAINS	to prevent running, pigment settling and uneven staining.
PASTE WOOD FILLERS	for controlled penetration, uniformity of color and pigment suspension.
CALKS AND PUTTIES	to impart shortness, prevent slumping, inhibit bleeding, improve "gunning."
PRINTING INKS	to give sharp definition of print, control flow, impart thixotropy.

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CARTON SEALER
Lightweight

Known as "Lezam Gluer," this unit is designed to seal cartons more securely than gummed tape or staples. Using liquid glue, this gluer can dispense the adhesive in an even coat to any size area with the utmost flexibility, according to the manufacturer. Additional economies claimed are speed and ability to use ungummed lables. This unit is portable and weighs about 5 lbs. Ever-Seal Industrial Glues, Inc., 520 Fifth Ave., New York 36, N. Y.

ORGANIC BRIGHTNER
Imparts Blue-White Fluorescence

Brightner M. D. A. C. is a fine organic compound which gives a bright blue fluorescence in very dilute solutions in either daylight or ultra-violet light. Soluble in aqueous acid solutions, resins, varnishes, vinyls and nearly all common organic solvents, such as alcohols, esters, ketones, ethers, glycols; slight solubility in aliphatic hydrocarbons.

This brightner is said to lighten polyamides and other resins, opening new applications for resins and improving many applications where they are now used. Used in overprint coatings making water clear by lightening and removing yellowish casts from resins making up the solids content of the varnishes and lacquers. For com-

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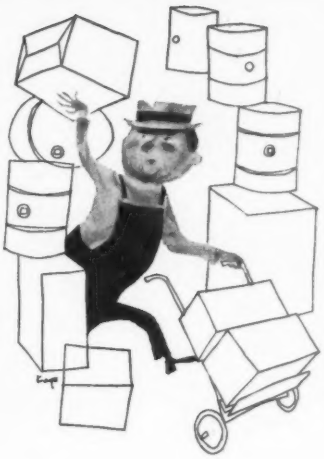

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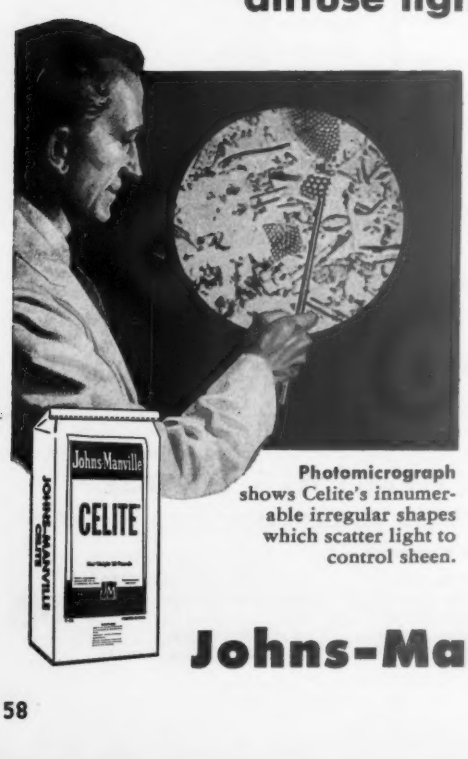
CELITE diatomite pigments diffuse light and control reflection



Photomicrograph shows Celite's innumerable irregular shapes which scatter light to control sheen.

A soft uniform flatness, even at low angles, is the beautiful result of formulating interior paints with Celite*. By forming a rich textured film that diffuses rather than reflects light, these microscopic particles assure an attractive flat appearance indefinitely. The surface never rubs up shiny. These same irregular particles also impart "tooth" to the film for strong, lasting adhesion to any surface.

Celite is diatomite, an extremely tough form of amorphous silica, that reinforces the paint film. And, the micro-porosity imparted by Celite checks blistering and peeling by aiding the escape of moisture vapor from unpainted plaster.

If you're concerned about low angle sheen, find out how Celite can give you complete control of this problem. Write for further information to Johns-Manville, Box 60, New York 16, N. Y. In Canada, 565 Lakeshore Rd. E., Port Credit, Ont.

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*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products

Johns-Manville CELITE THE EXTENDER PIGMENTS FOR ALL COATINGS

plete details, write to Advance Solvents & Chemical Corp., 245 Fifth Ave., New York 16, N. Y.

CHLORINATED PARAFFIN
Flame Retardant Additive

A high viscosity, liquid chlorinated paraffin with 50% chlorine content is called "Chlorowax 50."

It is said to provide a new standard of color and heat stability for chlorinated paraffin materials of this chlorine content. A viscosity of 125 poises and a chlorine content 25% higher than is available in normal 40% liquid chlorinated paraffins are said by the manufacturer to also make it suitable for paints and plastics as a flame retardant liquid plasticizer. Diamond Alkali Co., Chlorinated Products Div., 300 Union Commerce Building, Cleveland 14, Ohio.

PHTHALOCYANINE BLUE
High Strength Toner

Copper Phthalocyanine blue, Cyan Blue Toner BNF 55-3750, is said to be resistant to flocculation and highly crystal stable in aromatic hydrocarbon solvents. Provides lacquer and enamel formulators with a bright, clean, and strong red shade blue toner.

This particular pigment is a full strength copper phthalocyanine blue with a specific gravity of 1.59, weight per gallon of 13.25 pounds, and a bulking value of 0.0754 gal./lb. American Cyanamid Co., Pigment Div., 30 Rockefeller Plaza, New York 20, N. Y.

POLYACRYLATE
For Aqueous Dispersions

Hycryl A-1000 is a water solution of modified polyacrylate. According to the producer, this material has good particle suspending properties, film flexibility and water resistance. This chemical finds application in the preparation of aqueous dispersions of pigments or other finely divided substances where maximum solids concentration at minimum stable viscosity is required and where water resistance of deposited particles, minimum settling and simplicity of formulation are desirable. Union Bay State Chemical Co., Inc., 491 Main St., Cambridge, Mass.

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PERSONNEL CHANGES

SHELL CHEMICAL

Russell L. Maycock has been appointed Director of the Houston research laboratory, C. W. Humphreys, Vice President, Manufacturing, has announced.

Maycock is Assistant Manager of the physical chemistry department at the company's Emeryville research center. He will replace **J. Anderson,** who was named Director of the research laboratory in Torrance, Calif.

CONTINENTAL CAN

Dr. Frederick W. Adams has been appointed Director of the Department of Chemistry of the Central Research and Engineering Division, it was announced by Curtis E. Maier, General Manager of the Division.

Dr. Adams was formerly research and development director of the company's Millsplastic Division. He is the author of about 30 publications on various chemical engineering operations, and also holds 15 patents on new developments in that field.

BAKER CASTOR OIL

Dr. Harold Zinnes has joined the Technical Division staff at Bayonne, N.J. He has been assigned to the research department for the development of new products.

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R. Bieneman

D. McCready

SPENCER KELLOGG

Richard A. Bieneman has been appointed Research Group Leader at the Paint Laboratory in the company's new Research Center. He will directly supervise development work on new products for the paint industry, according to Dr. Malcolm M. Renfrew, Director of Research and Development. In addition, he will be concerned with customers' problems in the paint and varnish trade.

Mr. Bieneman comes to Buffalo from Detroit, where he was Chief Chemist for the Seal-Rite Co. He also was formerly a Production Superintendent and Paint Formulator for Rinshed-Mason Co.

Donald D. McCready has been promoted to the position of Mid-West Field Representative of the Technical Service Department, attached to the Chicago offices. He joined the company in 1947 working in the Technical Service Laboratory in Buffalo. Later he became a member of the Technical Service staff and Assistant Manager of the department in 1953.

AMERICAN CYANAMID

Neil B. Conley has been appointed Director of Sales of the Organic Chemicals Division, it was recently announced by V. E. Atkins, Division Manager.

He joined the company in 1931 as manager of the Ultramarine Co., New York City. In 1940 he was made Sales Manager of the Jobber and Resale Department at the company's Bound Brook Plant, and in 1954 was appointed Assistant Director of Sales for the Organic Chemicals Division. Prior to his association with the firm, Mr. Conley was President of the National Ultramarine Co., Cincinnati, Ohio.

GENERAL ELECTRIC

Wallace S. Frank has been appointed Supervisor, Process Development Unit, for the Silicone Products Department, according to an announcement by E. A. Kern, Manager, Engineering.

He joined the company as a chemical engineer at Waterford, N. Y., in 1950 and the following year became a group leader in the New Products and Processes section there. He was named to a supervisory post in 1953. His headquarters will be at Waterford, N. Y.

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says W. B. Winkler, Factory Manager,
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GOODYEAR

James R. Frazier has been added to the sales operating staff of the Chemical Division, it was announced by C. O. McNeer, General Sales Manager of the Division. He will assist in processing and expediting customer orders on shipments concerning raw material chemical products.

J. R. Frazier

Mr. Frazier joined the company in 1951 as a member of the training squadron and shortly after was assigned to the Interplant Relations Department where he remained until taking over his new duties.

STANDARD ULTRAMARINE

Dr. W. H. Stark was elected a Director of the company at a special meeting of the stockholders, according to Major Henry Dourif, President. Following this meeting the Board elected Dr. Stark to the newly created office of Executive Vice President and General Manager of the company. He was formerly Assistant to the President.

CLIMAX MOLYBDENUM

George L. Innes has been appointed manager, Chemical Sales, it was announced by L. E. Ekholm, Manager, Sales.

According to the announcement, he will have full responsibility for sales of molybdenum chemicals and molybdenum for chemical uses in both industry and agriculture.

TEXAS BUTADIENE

K. D. Bowen has been appointed Vice President and General Manager of the newly formed Texas Butadiene & Chemical Corp., Houston, Texas, it was announced by E. L. Green, Jr., President.

Mr. Bowen was associated with the Dow Chemical Company for 17 years in various capacities, including Manager of the Texas Styrene Plant. In 1946 he joined Celanese Corporation of America as Manager of its first chemical plant located at Bishop, Texas. He became Manager of Plant Operations of the Chemical Division of Celanese Corporation in 1951 and was transferred to Charlotte, N. C. in 1953 as Director of Manufacturing Coordination for the corporation.

HERCULES

Dr. Wyly M. Billing and **John R. L. Johnson, Jr.,** members of the Board of Directors, were elected Vice Presidents of the company. Both men also were elected members of the Executive Committee.

Dr. Billing has been General Manager of the Synthetics Department since 1943, and Mr. Johnson has been Director of the company's Legal Department and general counsel since 1949.

Henry A. Thouron has been appointed General Manager of the Synthetics Department, and **Charles S. Maddock,** Director of the Legal Department and general counsel. The announcements were made by Albert E. Forster, President.

EAGLE-PICHER

Pascal M. Rapier has been appointed Process Engineer at the Clark, Nev. plant, where "Celatom," the company's diatomaceous silica, is processed, it was announced by Glen J. Christner, Vice President.

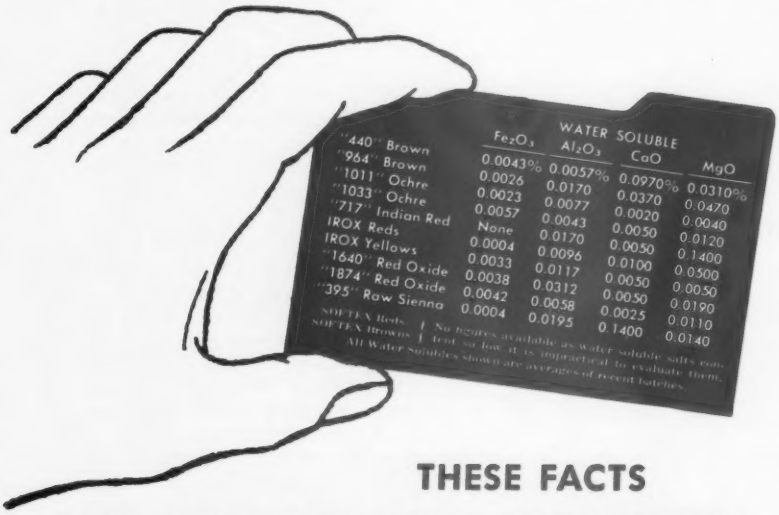
He will be active in the developing and processing of diatomaceous earth and filter aids.

Mr. Rapier was affiliated with the Great Lakes Carbon Corp. at their Dicalite Div. in Walteria, Cal., where he supervised new products and process development. From 1943 to 1946, he was associated with United States Industrial Chemicals, Inc., Pensacola, Fla. as plant engineer.

SAPOLIN

Sidney Frank has been added to the New York Sales Staff. He will cover Manhattan as well as all department stores in the metropolitan area. He was formerly associated with Cantor Bros., Brooklyn, N.Y.

Manufacturers of Latex Emulsion Paints...



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Certain latex emulsion paint systems present special vehicle problems... Where these problems can be avoided through careful selection of iron oxide colors, consider the properties of REICHARD-COULSTON pigments.

Which of our pigments best meets your needs? Our laboratories have made extensive evaluation tests to help you determine this.

Take the case of Styrene-Butadiene and Post Plasticized Polystyrene emulsion systems...

For pigments practically free of di- and tri-valent soluble salts, we recommend the REICHARD-COULSTON pigments shown on the chart.

In the case of Polyvinyl Acetate and Acrylic emulsion systems where soluble salts requirements are not as critical, these same pigments can also, of course, be used.

See how REICHARD-COULSTON pigments can help keep your latex emulsion paint production free of vehicle problems. In requesting free samples of pigments listed in the chart, please state amount required for your test.

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ARCHER-DANIELS-MIDLAND

S. Ken Tyson has been appointed Assistant Manager of the Chicago office, it was announced by James W. Moore, vice President and General Sales Manager,

S. K. Tyson

Tyson, a 22-year veteran of the paint industry, joined the company in April 1954 as a technical sales representative and moved to Chicago four months later. Prior to that he was Vice President and General Manager in charge of western operations for McCloskey Varnish. He is a graduate of the Drexel Institute of Technology and is a native of Harrisburg, Penna.

NATIONAL DISTILLERS

Minot K. Milliken has been elected a Director of the corporation. He is Vice President, Treasurer and a Director of Deering, Milliken & Co., Inc., and holds these same offices in Milliken Woolens, Inc. He is a director of Mercantile Stores Co., Inc. and Irving Trust Co. and is Vice President and a Director of the National Association of Wool Manufacturers.

JAMES B. DAY

Clarence W. Sterns has been appointed Executive Vice President, it was announced by Arthur T. Day, President.

Prior to joining the company in 1948, Mr. Sterns was associated with the American Marietta Co., paint manufacturers.

GENERAL TIRE and RUBBER

Joseph S. Goetz has been appointed Technical Sales Representative for Gen-Flo, styrene-butadiene latex for the paint industry, according to an announcement from L. W. Reeves, Manager, Chemical Sales. In his new position, Mr. Goetz will assist agents with sales and technical matters.

J. S. Goetz

He was formerly associated with the Arco Co. and the Glidden Co. in formulating and technical capacities. He has been an active member of the Cleveland Paint and Varnish Production Club since 1946.

GENERAL ELECTRIC

Thomas H. Reilly has been appointed Manager, Advertising and Sales Promotion for the Silicone Products Department, according to an announcement by T. C. Ohart, Department Manager, Marketing.

Mr. Reilly came to the General Electric Company in 1951, from the International Sewing Machine Co., where he had been Manager of Advertising and Sales Promotion. His headquarters will be in Waterford, N. Y.

PITTSBURGH PLATE GLASS

Donald J. King has been appointed to the newly-created position of Assistant Manager for the Memphis, Tennessee, distributing branch, it has been announced by D. C. Burnham, Vice President of the Merchandising Division.

Prior to his appointment, he had served as manager of the company's Muncie, Indiana, service branch during the past three years.

Mr. Burnham also announced these other changes: **Henry J. Schnorbus,** formerly Manager for the Baltimore distributing branch since 1937, has been appointed Manager of the Brooklyn, N. Y., distributing branch. He succeeds **Frank Clarke** who was retired following 42 years of service with the company.

Thodore E. Culler, who had been Manager of the Rochester, N.Y., distributing branch for the past four years, succeeds Mr. Schnorbus in Baltimore. He, in turn, is succeeded by **Andrew D. Peters,** formerly Manager at the Springfield, Mass., distributing branch since 1947. Succeeding Mr. Peters at Springfield is **John Q. Gooding,** who has served as Manager for the Quincy, Mass., service branch since 1953. No successor to Mr. Gooding has been announced by the company.

NOW You Can Stop Pressure Build-Up in Aluminum Paints With SYLOID® AL-1

Tests conducted by the Aluminum Research Laboratories of Aluminum Company of America ". . . indicate that SYLOID AL-1, when used in concentrations up to 1% based on total weight of paint, effectively retards pressure development in ready-mixed varnish base aluminum paint containing moisture in concentrations up to 0.5%."

This problem of pressure build-up in ready-mixed aluminum paints has long been a serious one. Now this pressure development can be stopped. The leaf stability of the paint is not affected and the drying rate is not retarded.

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T. D. Woldt

T. E. Wilde

REICHHOLD

Theodore O. Woldt and **Thomas Edward Wilde** have joined the West Coast technical sales contingent in the field of surface coating resins.

Mr. Woldt goes to the Azusa, Los Angeles plant. He has held positions with the Plaskon Division of Libbey-Owens-Ford and with the E. B. Taylor Co.

Mr. Wilde spent eight years in technical sales and development with the Griffin Chemical Co., before joining Reichhold's South San Francisco plant.

DEVOE & RAYNOLDS

J. C. Knochel has been elected Vice President in charge of the Trade Sales Division, it was announced by E. W. Endter, President.

J. C. Knochel

Mr. Knochel, who has been Vice President in charge of special assignments since early this year, and a Director since May, 1955, joined the organization in 1947 as Sales Manager of the Resin and Grinding Liquids Division of Jones-Dabney Company, a division of Devoe & Raynolds. In 1950, he was named a Vice President of Jones-Dabney, in charge of its Resins and Chemicals Division, and in June, 1954, was elected President of Truscon Laboratories, Inc., a division of Devoe & Raynolds.

COLUMBIAN CARBON

Carl W. Sweitzer, who has been associated with the Research Department for twenty-eight years and for the past four years in charge of Research Laboratories in Brooklyn, N. Y., has been appointed Director of Research and Development of the Carbon Black and Pigment Division.

George L. Heller, who has been in charge of the development program in Monroe for the past fifteen years, will continue in that position as Director of Development.

H. A. Braendle, member of the research organization for twenty-eight years and director of various phases of the research work, has been named Assistant to the Vice President.

SINDAR

A. T. Fiore has been appointed Manager of the newly established Market Development Department. His background includes more than twenty years experience in the technical aspects of the company.

The department was set up to keep the industry informed on developments and new products resulting from the company's research programs.

NAFTONE

Carl Teiwes has joined the company, according to E. M. Pflueger, President. He has been Secretary of William S. Gray & Co., chemical merchants, and for many years was in charge of domestic sales for this firm.

BROWN-ALLEN

Dr. James H. Boyd, Chemical Consultant, N. Y.; The Honorable **Carl E. Ring,** Member of the Bar of the State of New York and President of Electrical Engineers, Inc., Union City, N. J., and **Robert J. Hull,** Cities Service Company, N. Y., have been appointed to the Board of Directors, according to an announcement by John B. Fowler, Jr., President.

O'BRIEN PAINTS

Richard H. Allen has been appointed sales representative for the Tennessee area, it was announced by R. P. Cook ,General Sales Manager.

Mr. Allen will be responsible for the servicing of present dealers as well as the development of new accounts.

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. . . working together to develop and manufacture better cans. Here's management that talks your language—and wants to serve you.
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NATIONAL LEAD

Albert H. Hoffman has been named an Assistant Comptroller of the company; **Charles F. Peters** replaces him as Comptroller of the Titanium Division and **Walter J. Hawley** becomes Comptroller of the St. Louis and Southwestern branches.

Mr. Hoffman became Comptroller of the Titanium Division in 1951. He began his company career in 1921.

Mr. Peters was named Comptroller of the St. Louis and Southwestern branches in 1951. He started with the company at the St. Louis Titanium Division plant in 1927.

Mr. Hawley's career with the company began in 1912, when he started at the St. Louis Branch.

Harold D. Prior has been named Manager of the Washington, D. C., office, succeeding **Carlton H. Rose,** who is now Director of Public Relations for the company.

UNION CARBIDE

E. J. Fox has been appointed Assistant Works Manager, it was announced by H. D. Kinsey, Vice-President.

Mr. Fox joined the company in 1930 at South Charleston as a Production Engineer. He subsequently moved to Department Head and then Chemical Area Supervisor. Later he became Assistant Plant Superintendent at Texas City, and Superintendent of the butadiene plant operated for Rubber Reserve at Louisville, Ky. In 1946, he returned to his former position in Texas City and became Plant Superintendent in 1952.

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London, Ont. Canada

A. H. Hasse

W. L. Webb

GIBSON-HOMANS

Adrian H. Hasse has been appointed to the newly created post of Assistant to the President, according to an announcement by Norman M. Cornell, President. He has been with the company since 1950, first as a salesman and later in a supervisory capacity.

William L. Webb, special sales representative, has been transferred to the California Division of Protective Coatings Corporation, a subsidiary. He formerly covered a territory in New York, Pennsylvania and Ohio.

JOHNS-MANVILLE

Clinton B. Burnett has been appointed General Manager of the Celite Division, it was announced by A. R. Fisher, President.

He succeeds **Arthur S. Elsenbast,** a pioneer in the development of manufacturing methods and uses of diatomite products who has retired.

Mr. Burnett will be responsible for the operation of the plant and diatomite mine at Lompoc, Calif., as well as for the distribution and sales.

PONTIAC VARNISH

Harold A. Muehlbeck has been appointed Industrial Sales Manager, it was announced by C. H. Hutchins, President. He has been associated with Berry Bros., Detroit, for the past 34 years, during which he served as Assistant Industrial Sales Manager and as field representative in the Michigan-Ohio area.

SOLVAY PROCESS DIVISION

I. H. Munro has been appointed Vice President it has been announced by Carlton Bates, President.

He had been appointed assistant to the Executive Vice President in 1953. His headquarters will continue to be in New York.

PHOTOVOLT

G. H. Lovins has recently joined the staff and will be concerned with the development of new products. He holds a degree in chemistry as well as in electrical engineering and brings a background of over 21 years' experience in the laboratory instrument field including 15 years as research director of American Instrument Co., Inc.

NEWS

Dr. Long Joins Keeler & Long, Inc.

Dr. James Scott (Shorty) Long has recently joined Keeler & Long of Waterbury, Conn. where he will direct development and advancement in the field of corrosion prevention. He will be available to both industrial and utility companies for technical information in an effort to overcome their paint problems.

James S. Long

Dr. Long was formerly professor of chemistry at Lehigh University and for 21 years chemical director of Devoe & Raynolds Co. He retired from this position as of July 8th, 1955.

Dr. Long is well known throughout the paint industry and contributed much toward its technical progress. He was responsible for the introduction Dow-therm processing of resins and vehicles, and developed the two coat house paint system and the modern one coat house paint.

He presented the Joseph J. Mattiello Lecture at the 32nd Annual Meeting of the Federation of Paint and Varnish Production Clubs held in Chicago last year. He received the gold medal of the American Institute of Chemists and is an honorary member of several foreign societies. He carries the title of Distinguished Professor of the University of Louisville.

•

Krylon Sells Phila. Plant

Krylon, Inc., producer of spray acrylics and enamel paints, has sold its Washington Avenue plant in Philadelphia and moved its operations to Norristown, Pa., James W. Bampton, President, announced last month. Reason for the move, he said, was the urgent need for additional one-floor space, improved transportation facilities, and truck routes that would skirt central Philadelphia traffic.

English PVL Club Awarded Fed. Education Grant

An educational grant of $300 has been made by the Federation of Paint and Varnish Production Clubs to the Birmingham (England) Paint, Varnish & Lacquer Club to assist in the Club's educational program, which recently included the sponsorship of a series of lectures on "Paint Analysis."

These lectures were conceived and arranged by the Club's Program Committee and Dr. N. W. Hanson, who authored and presented the lectures at the University of Birmingham.

The Federation's check was presented to Charles W. Gilbert, Club President, at a recent meeting by Walter W. Hoffman, the American Consul in Birmingham, who acted in behalf of the Federation.

The lectures have been printed in book form and copies will be made available, from Federation Headquarters, to holders of the Federation's Paint Educational Aids Kit (PEAK).

•

New Shipping Vessel

Commercial Solvents Corp., has announced improved service on its deliveries of methanol to the East Coast through its arrangement for use of the new express S.S. Chemical Transporter. Unloading will be at distribution terminals in Philadelphia, New York and New Haven.

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Neville Resins

SUPERIOR QUALITY EXTERIOR ALUMINUM PAINT VEHICLE

Gallons	Pounds	
	100	R-11 NEVILLE RESIN
40	324	OKO Linseed Oil, M2.5
11.5	84	2-50-W HI-FLASH SOLVENT
53	340	Mineral Spirits
	2.7	6% Cobalt Naphthenate
114	850.7	

VEHICLE CONSTANTS

Solids	50%
Viscosity (Gardner)	B-C
Color (Gardner)	12-14
Acid Number (on solids)	3 Maximum
Set-to-touch	3-4 Hours
Dry	18 Hours

Method of Preparation: Melt and mix together R-11 Neville Resin and OKO Linseed Oil at 350°F. Reduce and add drier.

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P-60

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NEWS

Start Hercules Plant Addition at Burlington

Operations have started on a new $4,000,000 addition to Hercules Powder Company's Burlington, N. J., plant. The new facilities will be used to manufacture DMT (dimethyl terephthalate), basic chemical for the manufacture of 'Terylene,' a new synthetic fiber, which will be made in Canada by Canadian Industries (1954) Ltd.

The Burlington plant addition will supply one million pounds of DMT a month to a new $22,000,000 plant at Millhaven, Ontario, of CIL. This plant, which has recently gone on stream, will make about 11 million pounds of 'Terylene' annually. During the past year, Hercules has been producing DMT on a semicommercial scale pending completion of the new unit. The new Hercules plant also supplies licensees of ICI in foreign countries.

Representatives of Imperial Chemical Industries Limited, and Canadian Industries (1954) Limited, and top executives of Hercules were present recently for a tour of inspection of the new facilities.

The group included: A. E. Forster, President, Hercules Powder Co.; Dr. A. Caress, Chairman of the Terylene Council, Imperial Chemical Industries Limited; Roland Winsor, General Manager, Fibers Department, Canadian Industries (1954) Ltd.; Dr. Wyly M. Billing, General Manager; and Paul L. Johnstone, Director of Development, Hercules' Synthetics Dept.

•

Resins From Pinon Trees

Resin from pinon trees on the Navajo Indian reservation in Arizona can be used in paints, according to a report from the University of Arizona.

However, despite its superiority, the resin cannot be harvested in sufficient quantities or at low enough cost to compete with resins from other pines and cheap synthetics.

CALENDAR OF EVENTS

Sept. 11-16. Fall Meeting of Div. of Paint, Plastics and Printing Ink Chemistry, ACS, Minneapolis, Minn.

Sept. 29-30. American Tung Oil Annual Convention, Edgewater Gulf Hotel, Edgewater Park, Miss.

Oct. 3-5. 33rd Annual Meeting, Federation of Paint and Varnish Production Clubs and 20th Paint Industries' Show, Hotel Statler, New York City.

Oct. 31-Nov. 1-2. 67th Convention of National Paint, Varnish and Lacquer Assoc., Shoreham and Sheraton-Park Hotels, Washington, D. C.

Ptoduction Club Meetings

Baltimore, 2nd Friday, Park Plaza Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., 2nd Monday.
Cincinnati — Oct., Dec., Mar., May, Hotel Alms.
Dayton — Nov., Feb., April, Suttmillers.
Indianapolis — Sept., Claypoll Hotel.
Columbus — Jan., June, Fort Hayes Hotel.

Cleveland, 3rd Friday, Harvey Restaurant.

Dallas, 2nd Thursday, No Fixed Place.

Detroit, 4th Tuesday, Rackham Building.

Golden Gate, 3rd Monday, El Jardin Restaurant, San Francisco.

Houston, 2nd Tuesday, College Inn.

Kansas City, 2nd Thursday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Scully's Cafe.

Louisville, 3rd Wednesday, Seelbach Hotel.

Montreal, 1st Wednesday, Queen's Hotel.

New England, 3rd Thursday, University Club, Boston.

New York, 1st Thursday, Brass Rail, 100 Park Ave.

Northwestern, 1st Friday, St. Paul Town and Country Club.

Pacific Northwest, Annual Meetings Only.

Philadelphia, 3rd Wednesday, Engineer's Club.

Pittsburgh, 1st Monday, Fort Pitt Hotel.

Rocky Mountain, 2nd Wednesday.

St. Louis, 3rd Tuesday, Forest Park Hotel.

Southern, Annual Meetings Only.

Toronto, 3rd Monday, Diana Sweets, Ltd.

Western New York, 1st Monday 40-8 Club Buffalo.

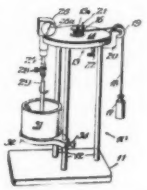
PATENTS

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired (to foreign countries $1.00 per copy) to the publisher.

Paint Testing Machine

U. S. Patent 2,712,235. . Harold R. Harlan, San Francisco, Calif.

A testing device of the character described comprising a cylindrical vessel for holding a test liquid and providing a surface for a test film thereof above the liquid level, means for rotating said vessel, a bristled brush assembly comprising a plurality of radially arranged brushes, means including a shaft for



U.S. Patent 2,712,235

mounting said brush assembly axially within said vessel in brushing contact with the interior surface thereof with substantially no vertical load, a lever having a fulcrum, a counterweight carrier by said lever, a scale cooperable with said counterweight, and means operatively connecting said shaft with said lever to rock the lever when said shaft is rotated, said counterweight being adjustable and cooperable with said scale to counterbalance the force tending to rotate the shaft and to indicate the degree of said force.

Polytetrafluoroethylene Coating

U. S. Patent 2,710,266. Jerome Hochberg, Newburgh, N. Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware.

A substrate having a surface coating comprising polytetrafluoroethylene and at least one water-soluble alkali metal silicate from the group consisting of sodium silicate and potassium silicate, said alkali metal silicate being present in an amount of about 6.0% to 50.0% of the combined weight of polytetrafluoroethylene and said alkali metal silicate, the molar ratio of alkali metai oxide to silicon dioxide in the alkall metal silicate being at least 1:1.

Method of Amplifying Paint Mixtures

U. S. Patent 2,714,073. John F. Greene, Queens Village, N. Y.

A method of amplifying ready mixed commercial oil paint, comprising first, dissolve 5 lbs. of rosin in 2 gals. of methyl alcohol and allow the result to stand for twenty-four hours; next, dissolve three lbs. of gum arabic in a small amount of water; third, stir in 20 gals. of water for about 5 minutes 2 lbs. of lead acetate, 2 lbs, of zinc acetate, 1 lb. of caustic soda, 1 lb. of water glass, and 1 lb. of Irish moss; fourth, add the dissolved rosin and the dissolved gum arabic to the contents of step third and add sufficient water to make a total of 50 gallons; fifth, allow the latter to stand for a few hours; sixth, mix 9 gallons of water to each gallon of the 50 gallons to make a total of 450 gallons; and to each of the 450 resultant gallons mix well one gallon of thoroughly mixed commercially prepared oil paint.

Paste Pigments

U. S. Patent 2,713,006. . Samuel N. Hunter, East St. Louis, Ill., assignor to Hunter Metallic Products Corporation, East St. Louis, Ill., a corporation of Illinois.

A paste pigment composition containing finely divided particles of a ferrous metal, wetted and coalesced with a wetting agent comprising 25 to 80 per cent of liquid cholrinated polyphenyl, having a chlorine content of not more than approximately 60 per cent to form soft, or plastic pigment compositions having unusual utility.

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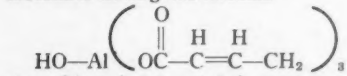
*LYTRON: REG. U. S. PAT. OFF.

Curing of Silicones With Aluminum Crotonate

U. S. Patent 2,714,585. . Maynard C. Agens, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York.

A composition of matter comprising (1) a heat-hardenable hydrocarbon-substituted polysiloxane resin, containing an average of more than 1 and less than 2 hydrocarbon groups per silicon atom and (2) a curing catalyst for the said resin comprising aluminum crotonate having the formula



the said curing agent being present in an amount sufficient to convert the said resin in the presence of heat to a cured, tack-free state.

Crackle Finish

U. S. Patent 2,714,560. . Raymond H. Hookway, Shaker Heights, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio, a corporation of Ohio.

The method of decorating a substantially non-porous surface to provide segregated raised areas of color superimposed upon a background color thereby imparting color to the areas between said segregated raised areas which comprises the steps of coating said surface with an oleoresinous base coating composition characterized in that it remains tacky for a period of from about 1 to about 8 hours, and during the time which said oleoresinous base varnish remains tacky, re-coating said surface with a latex water emulsion paint as a continuous wet film of non-uniform thickness by using a coating applying means which deposits the coating on direct contact of said means with said surface, and allowing the plural coated surface to dry.

Water-Base Paints

U. S. Patent 2,713,545. . William S. Kather, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York.

A composition of matter comprising (1) a water-base paint selected from the class consisting of water-base casein paints, water-base rubber paints, and water-base oil-modified alkyd resin paints, and (2) from 0.1 to 7 per cent, by weight, based on the weight of the solids content of the aforesaid water-base paint, of a water-soluble alkali-metal salt of a hydrocarbon-substituted silane triol.

Dispersible Asphaltic Composition

U. S. Patent 2,714,582. . Edward J. Day, Leominster, Mass., assignor to Lukon, Inc., Leominster, Mass., a corporation of Massachusetts.

A substantially dry asphaltic mix in a finely divided dry powder form characterized by substantially spontaneous dispersibility in water after the particles have become wet, said mix comprising the following components in the following proportions:

	Parts by weight
Finely divided friable asphaltic material	100
A finely divided dry dispersing agent selected from the group consisting of organic sulfonic acids, salts of organic sulfonic acids, lignosulfonate salts, water soluble soaps, polyoxyethylene stearate, sorbitan tristearate, sulfated fatty alcohols and sulfonated alkylphenoxyethanols	3 to 25
and a finely divided dry protective colloid	2 to 10

said mix having a degree of fineness such that a majority of the particles pass through a 300 mesh screen.

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Leading manufacturers of Paint, Varnish and Lacquer have come to DEPEND upon the high quality of VULCAN Pails and Drums.
Vulcan Steel Containers are made in all practical sizes with a wide selection of pouring nozzles and spouts, with Hi-Baked Interior Linings, and Colorful Lithographing.
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NEWS

Taylor Kew, son of Charles E. Kew, president Kinetic Dispersion Corp., leaves Idlewild Airport on two month trip to Germany and Belgium, as guest of manufacturers there.

New DuPont Paint Plant

The Du Pont Co. has announced plans to build a new paint plant at Tucker, Ga., 13 miles northeast of Atlanta, and a sales office and paint service warehouse building in Atlanta.

It is expected that plant construction will begin this fall and that operations will start in late summer 1956. The plant will manufacture paints, enamels, and thinners for household, industrial, automotive, and automotive refinish use.

CLASSIFIED ADVERTISEMENTS

Rates: $.20 per word, except those seeking employment, for which rate is $.10 per word. Minimum: ten words. Address all replies to Box Number, c/o Paint and Varnish Production, 855 Avenue of the Americas, New York 1, New York.

NOTICE

Any contention that the use of RESYNAX and/or ACRYLAC would constitute infringement of existing Trademarks will be duly considered. Address Box 911.

Wanted: — Aggressive Salesman with technical background preferably 2-3 years formulating experience. Must be willing to travel in any part of the United States, for a well-known Eastern Manufacturer of raw materials for the protective coatings industry. Reply giving essential personal and professional data references and recent earnings. Box 912.

Adds Pail Production Line

Vulcan Steel Container Co. in Birmingham have just completed the installation of an additional Steel Pail Production Line, according to announcement by company president, Gordon D. Zuck.

This new line. which includes modern new paint and lacquer spray equipment and large modern baking ovens, increases the company's production capacity of pails and drums by over 60%.

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ACRYLIC EMULSIONS
LATEX AND MODIFIED LATEX PAINTS
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Our finest Micro Mica is an excellent flatting agent for this type of paint.
The English Mica Co.
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Advance Info
PENTECAT L-Cuts Filtering Time in Varnish Production
A 50% aqueous solution of Lithium Naphthenate, PENTECAT L is an Alcoholysis Catalyst developed to promote the ester interchange in varnish production.
The many varnish makers using PENTECAT L report they were able to eliminate the filtration step that was necessary when inorganic catalysts were used.
PENTECAT L is a Lithium product, and since Lithium has an atomic weight of 6.9 compared to the 207 atomic weight of Lead (contained in most competing products), much less PENTECAT L is necessary to achieve the ester interchange. In other words, another saving results.
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NEWS

NYU Offers Full Surface Technology Courses

After an intermission of several years, the full Surface Technology program of the Graduate Division is being offered again. The graduate lecture course includes discussion of the raw materials, production processes and application methods of organic finishes. The relationship between chemical surface treatment of metals, or mechanical surface treatments, and the resulting "life" of applied coating systems will also be presented. Principles of research, production and control methods, and advanced finishing problems will be included as well as Specification test methods.

The laboratory course will supplement this program in practice. It will be offered in the new Surface Technology Laboratory of the Research Division in Manhattan. The students will be introduced to the use and application of modern research and evaluation instrumentation and to the basic processes of surface preparation and organic finishing. The courses will be given by Dr. Kronstein.

These courses are as follows:

Ch.E. 174-175. Surface Finishes. (Prerequisite Ch.E. 71-78, or equivalent). Full course. First and Second Terms.

Ch.E. 176-179. Surface Finishes Laboratory. (Prerequisite Ch. E. 174-175, or taken simultaneously). Full course. First and Second Terms. Friday evenings 6-9 P.M., Research Building No. 2, 401 West 205th Street, Manhattan.

The fee is $75.00 per term per course plus a $5.00 registration fee for students not already registered for the semester.

Interested persons, who have the necessary qualifications and not intending to complete a full Graduate Engineering program, may be admitted as Auditors.

Registration will be held September 20 and 21, from 6:30 to 8:30 P.M., at the Office of the Graduate Division, South Hall, University Heights. Further information may be obtained by writing to the Assistant Dean, Graduate Division, College of Engineering, New York University, University Heights, New York 53, N. Y.

•

Wynn, 56, Canco Manager

Michael J. Wynn, 56, Manager of the American Can Company's Hudson plant in Jersey City, died in July.

Mr. Wynn was a veteran of 40 years service with Canco. He began his career as a stock clerk in the firm's Brooklyn factory and, in 1927, became general foreman. He was transferred to the Hudson plant in 1929 and was given positions of increasing responsibility, culminating in his appointment as Manager in 1944.

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NEWS

Crawford Named Recipient Of Cargill Award

Mr. Arthur Klobe, sales promotion manager of the Vegetable Oils Division of Cargill, Inc., announced that Mr. H. L. Crawford of the Humble Oil and Refining Co., Houston, Texas, has been chosen by the Houston Production Club as recipient of Cargill's Special Scholarship.

H. L. Crawford

Recipients of Cargill's all-expense Scholarships attend the Fifth Advanced Paint Refresher Course given by Dr. Wouter Bosch at the North Dakota State Agricultural College.

Mr. Crawford, who is Chief Chemist of Humble Oil's Specialty Products Plant, received the scholarship as the Houston Production Club drew straws to determine the recipient.

•

Reichhold Opens K. C. Plant

The opening of a new plant in Kansas City, Kansas, by Reichhold Chemicals, Inc., has been announced by Henry H. Reichhold, General Manager. Occupying an eight acre plot in the Fairfax industrial section of the midwest city the plant will concentrate on production of Plyophen liquid and powdered phenolic resins.

Actual production at the plant is expected to be under way before the close of 1955. Plans include the installation of a formaldehyde plant and, gradually, manufacture of the company's full line of chemicals and resins. The plant will be managed by L. C. Brandt of Kansas City. Dr. A. L. Wooten will be Technical Director. He was formerly Director of Phenolic Research of the company's Central Division in Detroit.

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	GROCO 26 Special	GROCO 24 Regular
Titre	26°—29°C.	22°—25°C.
Color 5¼" Lovibond Red	2.5 max.	2.5 max.
Color 5¼" Lovibond Yellow	15 max.	15 max.
Color Gardner 1933	2 — 4	2 — 4
Unsaponifiable	0.25%—0.50%	0.25%—0.50%
Saponification Value	251 — 258	261 — 270
Acid Value	250 — 257	260 — 269
Iodine Value (WIJS)	7 — 15	7 — 13

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ZEIN

(*From page 35*)

Properties of Wax Systems

Samples have remained stable after storage for 60 days at 125 F. The oldest samples available are over 90 days old, and show no signs of deterioration under normal storage conditions. With the exception of Formulation I, all have satisfactory freeze-thaw stability.

The films from these wax systems have satisfactory gloss and show excellent water resistance when tested by the water spot method described in Federal Specifications T-W-155. They are poor in leveling, however, and the high resin formulations are difficult to remove with soap and water. Of the three formulations, only the high wax system (Formulation I) passed the removability test described in the Federal Specifications mentioned previously. It is believed that these deficiencies can be overcome with proper formulation.

The most pronounced effect of the zein on film properties, and the effect which we wish to emphasize, is the increased hardness and durability of the wax coatings. The Taber Abraser was used to measure this property. That durability is directly related to zein content was borne out by the abrasion tests, the results of which are outlined in Figure 2.

Summary

Zein, a product of American farms and industry, has been found useful in formulations of dry-bright floor finishes. This natural polymer from corn is an excellent film-former; its coatings possess good gloss and scuff-resistance. As a starting point for development of practical formulations, a dispersion prepared with zein, a resin, and ammonium oleate has been described. This system has excellent stability and gives films having desirable gloss, leveling, water resistance, and durability. Waxes can be introduced into the film by blending the zein dispersion with wax emulsions, or by using a single-cook operation. Films from such combined emulsions show improved buffability and retain a degree of hardness proportional to the zein content.

It is emphasized that the formulations described above are offered as starting points only. Modifications by those skilled in formulating dry-bright floor finishes can undoubtedly take greater advantage of the unique properties of zein.

•

Vulcan Containers, Inc. Recently Organized

A new organization, Vulcan Containers Inc., has been formed by consolidating Vulcan Stamping and Manufacturing Company and Vulcan Tin Can Company.

The parent stamping company was started in 1916, making small tin cans and metal specialties, such as ash and pin trays, casserole frames and wire spools. In the early 1920's the firm went into the manufacture of steel shipping containers. The tin can department, expanded by demands for its products by printing ink manufacturers, spare parts packagers and others, was incorporated as Vulcan Tin Can Company in 1945 and moved to another location.

After several moves, both companies were brought under one roof in enlarged facilities at Bellwood, Ill., a Chicago suburb, and will operate as a single organization.

Chats about Finishes

LACQUERS FOR PLASTICS

by H. G. PHILIPS, JR.

Coatings Laboratory
Cellulose Products Research Division

With the phenomenal growth of the plastics industry, there has been an increased need for special coatings for various plastic objects. Many plastic products require coatings to obtain special effects and improved appearance. Such requirements can be ideally met by lacquers.

To begin with, lacquers are the preferred finish for plastics because they dry rapidly without the necessity for force drying at elevated temperatures. This is particularly important since many plastics are adversely affected when subjected to high temperatures.

The coating of molded plastic objects often presents other problems such as the softening or etching of the surface by solvents, or poor adhesion, or plasticizer migration. Properly formulated lacquers—such as those using Hercules® nitrocellulose or ethyl cellulose—give good performance on various difficult-to-coat plastics such as polystyrene, cellulose acetate, and polymethylmethacrylate.

The Hercules Coatings Laboratory has recently developed lacquer formulations suitable for coating most of the common plastics. Write your nearest Hercules sales office for further information.

H. G. Philips, Jr.

Cellulose Products Department
HERCULES POWDER COMPANY
INCORPORATED
926 Market St., Wilmington 99, Del.

1C55-4

TECHNICAL Bulletins

EMULSIFYER, ANTI-FOAMER

Numerous applications in paint and other industries for Witco "DGL" are suggested in a 2-page technical service bulletin published by Witco Chemical Co., 122 E. 42 St., New York.

The bulletin analyzes physical properties of "DGL," a diethylene glycol mono laurate (diglycol laurate), blended with selective modifying agents. It is recommended by the company to the paint industry as an anti-foaming agent in latex and resin emulsion paint systems. It can also be an effective emulsifying agent in these products.

ITACONIC ACID ESTERS

A 9-page data sheet, No. 501, on two itaconic acid esters—dimethyl itaconate and di-n-butyl itaconate—has been published by Chas. Pfizer & Co., Inc. Chemical Sales Div., 630 Flushing Ave., Brooklyn 6, N.Y.

Detailed information on physical properties, vapor pressure, reactions, molecular structures, polymerization, toxicity, specifications and references are included.

CHICAGO PAINT YEAR BOOK

The Chicago Paint & Varnish Production Club has announced plans to publish its first year book. It is expected to be ready October 1.

The publication will be a practical handbook embracing a history of the organization, memorable events, goals for the future, a complete roster of members, committees, past officers, etc.

SOLVENT RECOVERY STILL

"Data Sheet 11524" discusses the redesigned Solvent Recovery Still for the recovery of carbon tetrachloride and other extraction vehicles.

Use of the "RS" Three-Heat Hot Plate, the arrangement of the raw solvent feed-line and the operation of the Solvent Recovery Still are among the features included in the 2-color leaflet available from Precision Scientific Co., Chicago 47, Ill.

CALCIUM CARBONATES

Two information bulletins deal with precipitated calcium carbonates.

The first concisely reviews the advantages provided by two company precipitated calcium carbonates in formulating polyamide gel alkyd flat wall paints, and gives three successful formulas for using these fillers and pigment extenders (Surfex and Non-Fer-A1).

The second discusses the principle of extending opaque pigments in enamels with Surfex and Multifex MM.

Copies are available to interested paint manufacturers on request. Write to Diamond Alkali Co., Silicate, Detergent, Calcium Division, 300 Union Commerce Building, Cleveland 14, Ohio.

TOLUIDINE RED

A 6-page pamphlet on the stability of toluidine red in latex paints is available from the Office of Information Services. New York University College of Engineering, University Heights 53, N. Y.

The pamphlet is a reprint of a paper which appeared in the June issue of this magazine by Dr. Max Kronstein, Louis F. DeLong and Matthew King, all of the Research Division of the NYU College of Engineering. It discusses the effect of lecithin, a soybean derivative, on dispersion and stability of toluidine red.

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THICKENING and GELLING

A technical bulletin on the thickening and gelling of organic and aqueous systems with "Permagel" has been issued by Minerals & Chemicals Corporation of America, Metuchen, N. J.

Designated SD-30, the bulletin contains formulations for gelling or thickening a wide range of liquids together with recommended procedures.

INTERIOR PAINTING

The American Home Reader Consumer Panel Report No. 43, which represents a cross section of the opinions of the magazine's readers, includes a section on interior painting. The report is available from the Research Director, American Home Magazine, 444 Madison Ave., New York 22, N. Y.

PENTAERYTHRITOL

A booklet entitled, "Pentaerythritol in Synthetic Vehicles," is available from Delaware Chemicals, Inc., P.O. Box 148, Wilmington, Del.

The booklet covers such subjects as the alcoholysis and esterification of pentaerythritol, the manufacture and use of pentaerythritol esters of rosin and tall oil, and the use and application of pentaerythritol alkyds in various types of finishes.

FLAME PHOTOMETER

A 4-page folder giving design data on the new Norelco Flame Photometer (Type 12130) has been announced by the Research and Control Instruments Division, North American Philips Co., Inc., 750 S. Fulton Ave., Mount Vernon, N. Y.

Information is included on the subjects of accuracy, sensitivity, atomizer, burner, electrical circuit, internal standard, optics, operating conditions, maintenance and accessories.

TECHNICAL LITERATURE

A checklist of literature put out by the company has been issued by Diamond Alkali Co., Union Commerce Building, Cleveland 14, Ohio.

The 17-page publication lists and describes reference manuals and handbooks; technical bulletins and data sheets; product folders and leaflets; and miscellaneous publications.

CHLORINATED SOLVENTS

A 14-page technical bulletin concisely reviewing its complete line of specialized chlorinated solvents has just been issued by the Chlorinated Products Division of Diamond Alkali Company, 300 Union Commerce Building, Cleveland, Ohio.

Products discussed in the bulletin, entitled "Diamond Chlorinated Solvents," are methyl chloride, methylene chloride, chloroform, carbon tetrachloride, and perchlorethylene. It presents, in easy-to-read, quick-reference digest form, basic data on each product—description, physical properties, typical shipping analysis, major uses, handling precautions, and size of containers for shipment.

NEWS

MCA Approves Specs. For Steel Shipping Containers

Recommended universal standard specifications for steel shipping containers have been adopted by the Metal Packages Committee of the Manufacturing Chemists' Association, according to an announcement made August 1 by the Steel Shipping Container Institute.

Developed as a result of close cooperation between the MCA Metal Packages Committee and SSCI's Technical Advisory Committee, the recommended standards were established to reduce wide variations in container design specifications and help to improve handling and shipping while speeding-up manufacturers' orders for new containers.

Livingston Keplinger, SSCI president, emphasized the importance of uniformity in steel container specifications for chemical shipments by pointing out the industry's 1954 consumption of "roughly 35 per cent of all the new drums and 17 per cent of the pails produced."

The new specifications were accepted with "the understanding that such standards are not binding on any maker or user of said containers."

The recommended standards cover the following container types: 55-gal., tight-head drums under ICC 17E and Rule 40; 400-lb./55-gal., full-removable-head drums under Rule 40; 30-gal., tight-head drums under ICC 17E and Rule 40; 120-lb./16-gal., full-removable-head grease drums under Rule 40; 16-gal., tight-head drums under Rule 40; 5-gal., tight-head pails under ICC 17E and Rule 40; 5-gal./35-lb., lug-cover pails under ICC 37A and Rule 40.

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Witco Has Western Hq.

Headquarters for the recently established Western Div. of Witco Chemical Co. is located at 3460 Wilshire Blvd., Los Angeles, California.

A 25-year service pin is awarded to H. R. Thies, right, gen. mgr. of the Chemical Div., Goodyear Tire & Rubber Co. by E. J. Thomas, company president. Thies has been in charge of Chemical Div. since it was organized in 1948. He joined Goodyear in 1930; named to present post January 1, 1954.

Color Measurements Course

Some 40 representatives of industries in the eastern U. S. and Canada participated in a color measurements course sponsored jointly by Union College and General Electric Company's Instrument Department at Lynn, Mass., in early August.

The two-week course was conducted by some of the nation's leading color-measurement authorities, and held in the Physics Department of the college. It is built around the G. E. recording spectrophotometer, an instrument which is said to measure all shades of color. Automobile, chemical, textile and plastics industries were among those represented.

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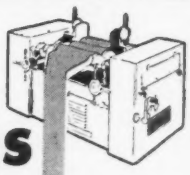

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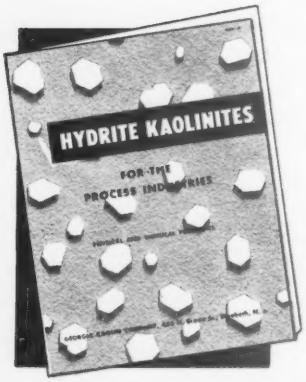

In addition to the ratio of plates to stacks, the chemical, physical, and colloidal properties of the HYDRITE Kaolinites have an important bearing on their usefulness as extender pigments. Due to their basic nature, these grades impart desirable brushing, levelling, and suspension characteristics, and are extremely easy to disperse. Furthermore, their inert nature and freedom from soluble salts causes them to be completely non-reactive in all types of paint systems.

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